U.S. DEPARTMENT OF COMMERCE
Patent and Trademark Office

SEARCH REQUEST FORM

111584

Requestor's Name: LA VILLA Serial Number: 09/830,032

Date: 1/7/04 Phone: 2-1539 Art Unit: 1775

Search Topic:

Please write a detailed statement of search topic. Describe specifically as possible the subject matter to be searched. Define any terms that may have a special meaning. Give examples or relevant citations, authors keywords, etc., if known. For sequences, please attach a copy of the sequence. You may include a copy of the broadest and/or most relevant claim(s).

Please do structure / CRN search as appropriate.

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- _____ CM-1
- _____ Pre-S

Type of Search
- _____ N.A. Sequence
- _____ A.A. Sequence
- ✓ Structure
- _____ Bibliographic

Vendors
- _____ IG Suite
- ✓ STN
- _____ Dialog
- _____ APS
- _____ Geninfo
- _____ SDC
- _____ DARC/Questel
- _____ Other

STIC Search Report
Biotech-Chem Library

STIC Database Tracking Number: 111584

TO: Michael Lavilla Location: REM 5e79 Wednesday, January 07, 2004 Art Unit: 1775 Phone: 272-1539 Serial Number: 09 / 830032	From: Jan Delaval Location: Biotech-Chem Library Remsen Building – 1A51 Phone: 571-272-2504 jan.delaval@uspto.gov

Search Notes

10/21/99

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=> fil reg
FILE 'REGISTRY' ENTERED AT 15:23:33 ON 07 JAN 2004
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STRUCTURE FILE UPDATES:     5 JAN 2004  HIGHEST RN 634558-38-6
DICTIONARY FILE UPDATES:    5 JAN 2004  HIGHEST RN 634558-38-6

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2003

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information enter HELP PROP at an arrow prompt in the file or refer
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=> d sta que l7
L5              STR
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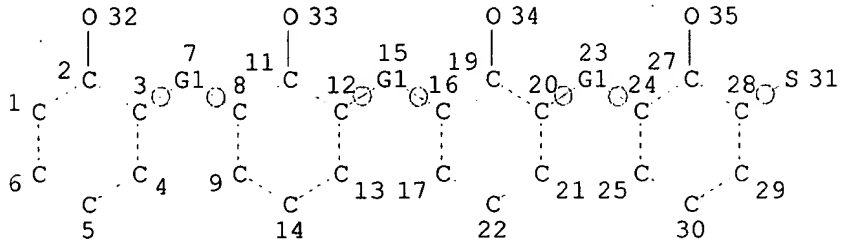


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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RING(S) ARE ISOLATED OR EMBEDDED
NUMBER OF NODES IS  32

STEREO ATTRIBUTES: NONE
L7          397 SEA FILE=REGISTRY SSS FUL L5

100.0% PROCESSED    459 ITERATIONS                          397 ANSWERS
SEARCH TIME: 00.00.01


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L1             1 S E3,E4
L2             1 S (JP99-144750 OR JP98-318333)/AP,PRN
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L3            1 S L1,L2
                SEL RN

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L5              STR
L6           18 S L5
L7          397 S L5 FUL
                SAV L7 LAVILLA830/A

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L8            0 S L7

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L9          172 S L7
                E ODO J/AU
L10          52 S E3-E5
                E KAWAHARA N/AU
L11          23 S E3,E4
                E KAWAHARA NOBUKO/AU
L12           2 S E3
                E AKASHI K/AU
L13          47 S E3
                E AKASHI KOI/AU
L14          75 S E2,E4,E5
                E MIYANO S/AU
L15          14 S E3
                E MIYANO SOTARO/AU
L16         204 S E3,E4
                E IKI N/AU
L17          82 S E3,E6,E8
                E MOROHASHI N/AU
L18          34 S E3,E8
                E TAKEYA H/AU
L19         142 S E3,E5,E6
                E TAKEYA K/AU
L20          45 S E3,E11
                E MIYANARI S/AU
L21          38 S E5
                E KUMAGAI H/AU
L22         224 S E3,E4
                E KUMAGAI HITOSHI/AU
L23         142 S E3
                E COSMO/PA,CS
L24        1301 S E3,E4
L25          79 S L9 AND L10-L24
L26           0 S L9 AND (JUNICHI ? OR NOBUKO ? OR KOICHI ? OR SOTARO ? OR NOB
L27          32 S L25 AND ?COMPLEX?
L28           8 S L25 AND (H2O2 OR HYDROGEN PEROXIDE)

     FILE 'REGISTRY' ENTERED AT 15:10:05 ON 07 JAN 2004
L29           1 S 7722-84-1

     FILE 'HCAPLUS' ENTERED AT 15:10:44 ON 07 JAN 2004
L30           5 S L29 AND L25
L31           8 S L30,L28
L32           5 S L31 AND L27
L33           3 S L31 NOT L32
                SEL DN AN 3
L34           1 S L33 AND E1-E3
L35           2 S L3,L34
L36           4 S L32 NOT L33,L35
L37           6 S L35,L36 AND L1-L3,L9-L28,L30-L36
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L38           5 S L9 AND L29
L39           9 S L9 AND (H2O2 OR HYDROGEN PEROXIDE)
L40           1 S L38,L39 NOT L28
L41           7 S L37,L40
L42          67 S L9 AND ?COMPLEX?
L43          67 S L9 AND ?METAL?
L44          36 S L42 AND L43
L45          45 S L9 AND (PY<=1999 OR PRY<=1999 OR AY<=1999)
L46           7 S  L45 AND L44
L47          13 S L41,L46
L48          24 S L45 AND P/DT
L49          20 S L48 NOT L47
                SEL RN L47

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L50         131 S E4-E134
L51          25 S L50 AND L7
L52         106 S L50 NOT L51
L53          58 S L52 AND 1/ELC.SUB
L54          54 S L53 NOT (S OR O OR BR)/ELS

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L55          43 S L54 AND L9
L56          10 S L55 AND L45
L57           9 S L56 AND L42,L43
L58          16 S L47,L56,L57

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FILE COVERS 1907 - 7 Jan 2004  VOL 140 ISS 2
FILE LAST UPDATED: 6 Jan 2004  (20040106/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.

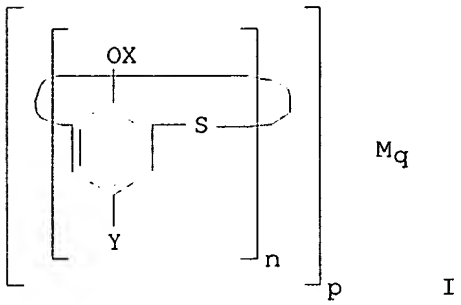

=> d 158 all hitstr tot

L58  ANSWER 1 OF 16  HCAPLUS  COPYRIGHT 2004 ACS on STN
AN   2002:305532  HCAPLUS
DN   136:331190
ED   Entered STN:  23 Apr 2002
TI   Cyclic phenol sulfide-metal complex catalysts, their
     compositions, and method for degradation of hydrogen
     peroxide by using them
IN   Odo, Junichi; Yamaguchi, Hanae; Takeya, Haruhiko;
```

Miyanari, Setsuko
PA **Cosmo** Sogo Kenkyusho K. K., Japan; **Cosmo** Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B01J031-22
ICS B01J032-00
CC 67-1 (Catalysis, Reaction Kinetics, and Inorganic Reaction Mechanisms)
Section cross-reference(s): 25
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002119863	A2	20020423	JP 2000-312711	20001012
PRAI JP 2000-312711		20001012		

OS MARPAT 136:331190
GI



I

AB The catalysts are shown as I [X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = H, (halogenated) hydrocarbyl, halo, acyl, OH, carboxyl, amide, amino, nitro, cyano, (chloro)sulfonic acid group, alkoxysulfonyloxy, sulfonic acid salt; n = 4-8; M = transition metal, Group IIB metal; p, q ≥1]. The compns. containing I, supported on solid supports, show good **H2O2** degradation properties.
ST cyclic phenol sulfide metal **complex** catalyst; **hydrogen peroxide** degrdn catalyst hydroxy polythiophenylene; ion exchanger support degrdn catalyst
IT Decomposition catalysts
(cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)
IT **211561-04-5DP**, transition and Group IIB metal **complexes**
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anionic exchanger-supported; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)
IT 138264-17-2, DEAE Cellulofine A 500
RL: CAT (Catalyst use); USES (Uses)
(catalyst support; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)
IT 7439-89-6DP, Iron, **complexes** with thiacalix[4]arene derivs.
7439-96-5DP, Manganese, **complexes** with thiacalix[4]arene derivs.
7440-02-0DP, Nickel, **complexes** with thiacalix[4]arene derivs.
7440-48-4DP, Cobalt, **complexes** with thiacalix[4]arene derivs.
7440-50-8DP, Copper, **complexes** with thiacalix[4]arene derivs.
7440-66-6DP, Zinc, **complexes** with thiacalix[4]arene derivs.
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(cyclic phenol sulfide-metal **complex** catalysts for

H2O2 degradation)

IT **7722-84-1, Hydrogen peroxide**, reactions
RL: POL (Pollutant); RCT (Reactant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
(cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)

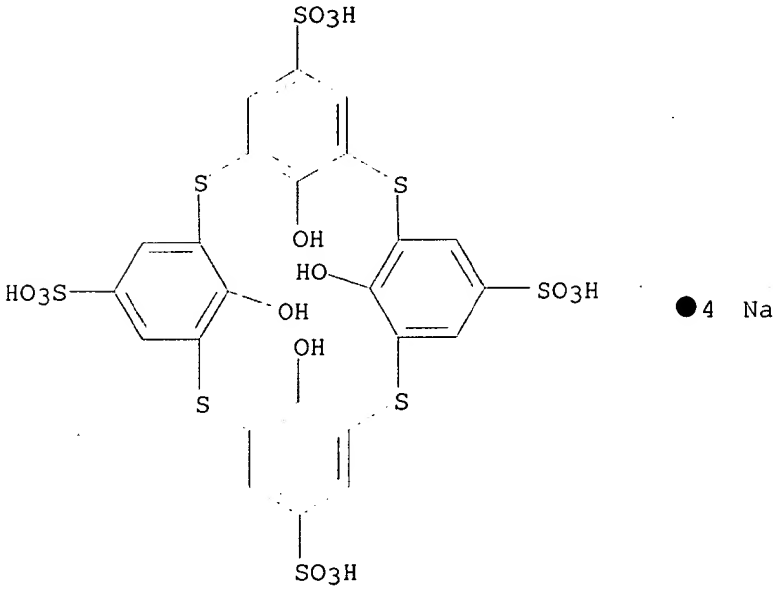
IT **182496-55-5P**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(for catalyst preparation; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)

IT 98-54-4, 4-tert-Butylphenol 7704-34-9, Sulfur, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(for catalyst preparation; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)

IT **211561-04-5DP**, transition and Group IIB metal **complexes**
RL: CAT (Catalyst use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(anionic exchanger-supported; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)

RN 211561-04-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)



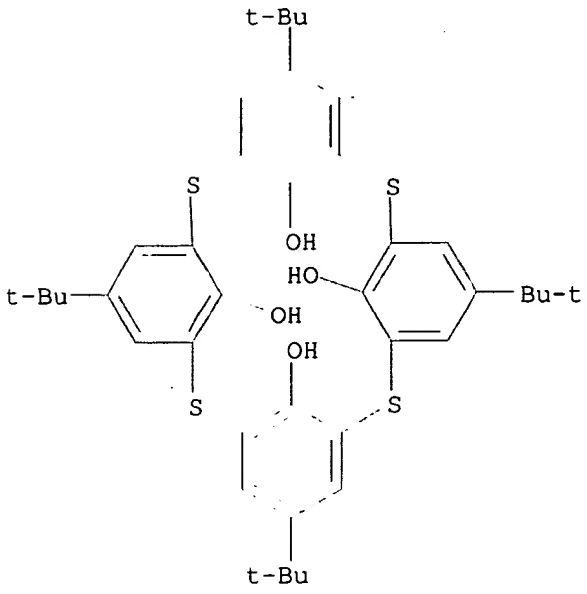
IT **7722-84-1, Hydrogen peroxide**, reactions
RL: POL (Pollutant); RCT (Reactant); REM (Removal or disposal); OCCU (Occurrence); PROC (Process); RACT (Reactant or reagent)
(cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)

RN 7722-84-1 HCAPLUS

CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

IT **182496-55-5P**

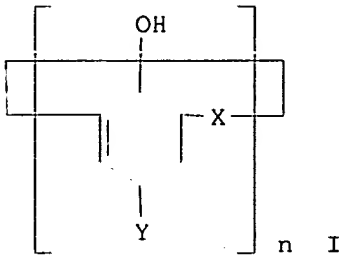
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(for catalyst preparation; cyclic phenol sulfide-metal **complex** catalysts for **H2O2** degradation)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 2 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:676876 HCAPLUS
DN 135:233670
ED Entered STN: 14 Sep 2001
TI Fluorescent material of cyclic phenol sulfide associated with metal and composition thereof
IN **Miyano, Sotaro; Iki, Nobuhiko; Takeya, Haruhiko; Miyanari, Setsuko; Kumagai, Hitoshi**
PA **Cosmo** Oil Co., Ltd., Japan
SO PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C09K011-06
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001066667	A1	20010913	WO 2001-JP1782	20010307
W: US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
JP 2001254075	A2	20010918	JP 2000-64446	20000309
EP 1264872	A1	20021211	EP 2001-912160	20010307
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
US 2003189190	A1	20031009	US 2003-220807	20030414
PRAI JP 2000-64446	A	20000309		

WO 2001-JP1782 W 20010307
OS MARPAT 135:233670
GI



I

AB The invention refers to a thiacalixarene, sulfinyl thiacalixarene, or sulfonyl thiacalixarene rare earth metal ion fluorescent **complex** I [X = S, SO, or SO2; n = 4 - 6; Y = H, hydrocarbon, halo-hydrocarbon, -COR1, -OR2, -COOR3, -CN, -CONH2, -NO2, -NR4R5, halo, -SO4R6, or -SO3R7; R1-5= H, or hydrocarbon; R6,7= H, hydrocarbon, or metal], and a fluorescent material composition obtained by dispersing or dissolving the fluorescent material in a medium.

ST fluorescent material calix arene sulfur

IT Fluorescent substances
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

IT 10025-74-8, Dysprosium chloride 10042-88-3, Terbium chloride TbCl3 10043-27-3, Terbium nitrate 10361-82-7, Samarium chloride
RL: DEV (Device component use); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

IT 76-05-1P, uses **7722-84-1P, Hydrogen Peroxide**, uses **211561-04-5P 359416-51-6P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

IT 64-19-7, Acetic acid, reactions 98-54-4, 4-tert-Butylphenol 143-24-8, Tetraethylene glycol dimethyl ether 7664-93-9, Sulfuric acid, reactions 7704-34-9, Sulfur, reactions 11138-47-9, Sodium perborate
RL: RCT (Reactant); RACT (Reactant or reagent)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

IT 60705-62-6P **182496-55-5P 204190-49-8P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

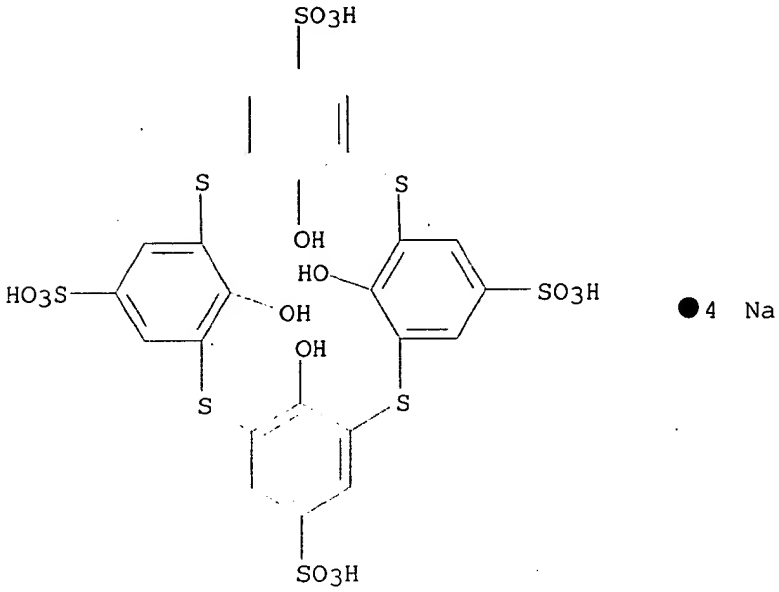
RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Cosmo Research Institute; JP 11199581 A 1999 HCAPLUS
(2) Res Dev Corp Of Japan; JP 633049 A 1994
(3) Res Dev Corp Of Japan; JP 07206881 A 1995 HCAPLUS

IT **7722-84-1P, Hydrogen Peroxide**, uses **211561-04-5P 359416-51-6P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

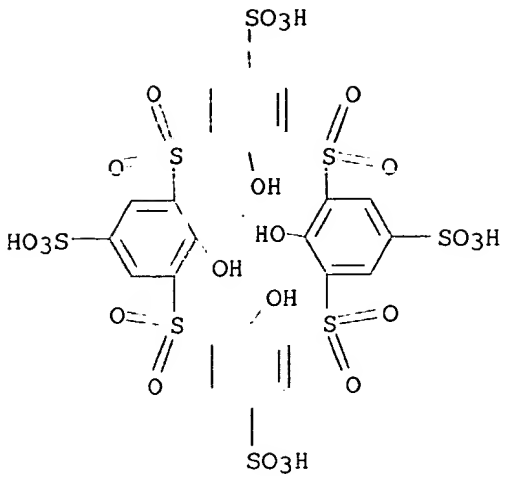
RN 7722-84-1 HCAPLUS
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO—OH

RN 211561-04-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)



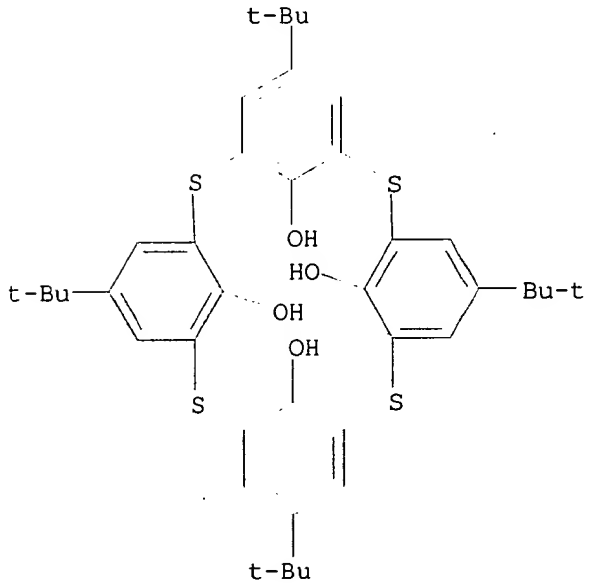
RN 359416-51-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, 2,2,8,8,14,14,20,20-octaoxide, tetrasodium salt (9CI) (CA INDEX NAME)



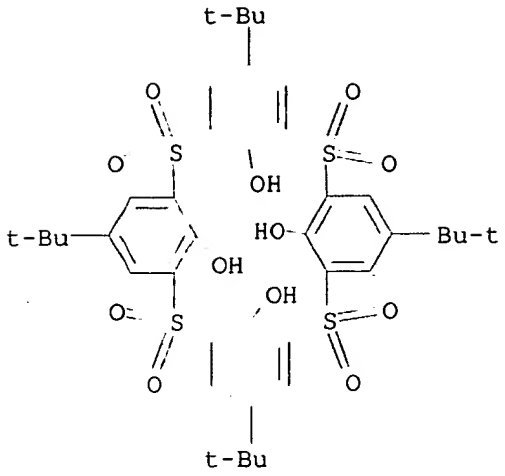
● 4 Na

IT **182496-55-5P 204190-49-8P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(fluorescent material of cyclic phenol sulfide associated with metal and composition thereof)

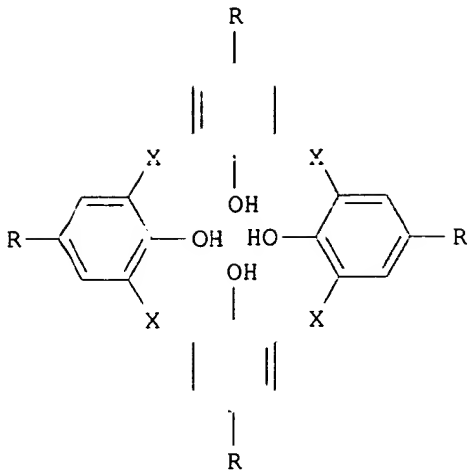
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 204190-49-8 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



L58 ANSWER 3 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2001:457157 HCAPLUS
DN 135:257224
ED Entered STN: 25 Jun 2001
TI Selective oxidation of thiacalix[4]arenes to the sulfinyl and sulfonyl counterparts and their **complexation** abilities toward metal ions as studied by solvent extraction
AU **Morohashi, N.**; **Iki, N.**; Sugawara, A.; **Miyano, S.**
CS Graduate School of Engineering, Department of Biomolecular Engineering, Tohoku University, Aoba-ku, Sendai, 980-8579, Japan
SO Tetrahedron (2001), 57(26), 5557-5563
CODEN: TETRAB; ISSN: 0040-4020
PB Elsevier Science Ltd.
DT Journal
LA English
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 68
OS CASREACT 135:257224
GI



I

AB Practical methods for the synthesis of sulfinyl- and sulfonylcalix[4]arenes I [X = S(:O), SO2; R = Me3C, Me3CCH2C(Me)2] were provided by the selective oxidation of thiacalix[4]arenes I [X = S; R = Me3CCH2C(Me)2] with controlled amts. of an oxidant such as NaBO3 or **hydrogen peroxide** under mild conditions. The coordination ability of thiacalix[4]arene I [X = S; R = Me3CCH2C(Me)2] and the sulfinyl and sulfonyl analogs toward a wide variety of metal ions was investigated by solvent extraction and compared to that of the conventional methylene-bridged calix[4]arene I [X = H2C; R = Me3CCH2C(Me)2] . It was shown that the metal-ion selectivities of thiacalixarenes I [X = S, S(:O), SO2; R = Me3CCH2C(Me)2] were controlled by the oxidation state of the bridging sulfur moiety. I [X = S; R = Me3CCH2C(Me)2] preferred soft metal ions by binding with S, while I [X = SO2; R = Me3CCH2C(Me)2] preferred hard metal ions by ligating with the sulfonyl oxygens in addition to the adjacent two phenoxide oxygens, resp. In good accordance with this hypothesis, I [X = S(:O); R = Me3CCH2C(Me)2] could bind to both hard and soft metal ions by using sulfinyl O and S, resp. These made sharp contrast to the parent I [X = H2C; R = Me3CCH2C(Me)2] which could not essentially extract any metal ions at all, lacking any lone pair electrons on the methylene bridges for coordination.

ST thiacalixarene sulfinylcalixarene sulfonylcalixarene prepn metal ion **complexation**

IT Metacyclophanes
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(calixarenes; preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT Alkali metals, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(ions; lack of **complexation** of metal ions by thia-, sulfinyl- and sulfonylcalixarenes)

IT Alkaline earth metals
Rare earth metals, processes
Transition metals, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(ions; preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **Complexation**
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT 7439-93-2D, Lithium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-98-7D, Molybdenum, thia,sulfinyl;and

sulfonyl calix[4]arene **complexes**, processes 7440-06-4D, Platinum, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-09-7D, Potassium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-16-6D, Rhodium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-17-7D, Rubidium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-23-5D, Sodium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-28-0D, Thallium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-36-0D, Antimony, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-46-2D, Cesium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-47-3D, Chromium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(lack of **complexation** of metal ions by thia-, sulfinyl- and sulfonylcalixarenes)

IT 7439-89-6D, Iron, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-92-1D, Lead, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-95-4D, Magnesium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-96-5D, Manganese, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7439-97-6D, Mercury, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-02-0D, Nickel, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-05-3D, Palladium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-10-0D, praseodymium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-22-4D, Silver, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-24-6D, Strontium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-32-6D, Titanium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-39-3D, Barium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-43-9D, Cadmium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-48-4D, Cobalt, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-50-8D, Copper, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-53-1D, Europium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-57-5D, Gold, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-58-6D, Hafnium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-65-5D, Yttrium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-66-6D, Zinc, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-67-7D, Zirconium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-69-9D, Bismuth, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes 7440-70-2D, Calcium, thia,sulfinyl;and sulfonyl calix[4]arene **complexes**, processes
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **182496-64-6DP**, Metal **complexes 215511-22-1DP**, Metal **complexes 362055-65-0DP**, Metal **complexes**
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT 42607-92-1D, Metal **complexes**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation,

nonpreparative)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **182496-64-6**
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **215511-22-1P 362055-65-0P**
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

IT **204190-49-8P 221098-82-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

RE.CNT 50 THERE ARE 50 CITED REFERENCES AVAILABLE FOR THIS RECORD

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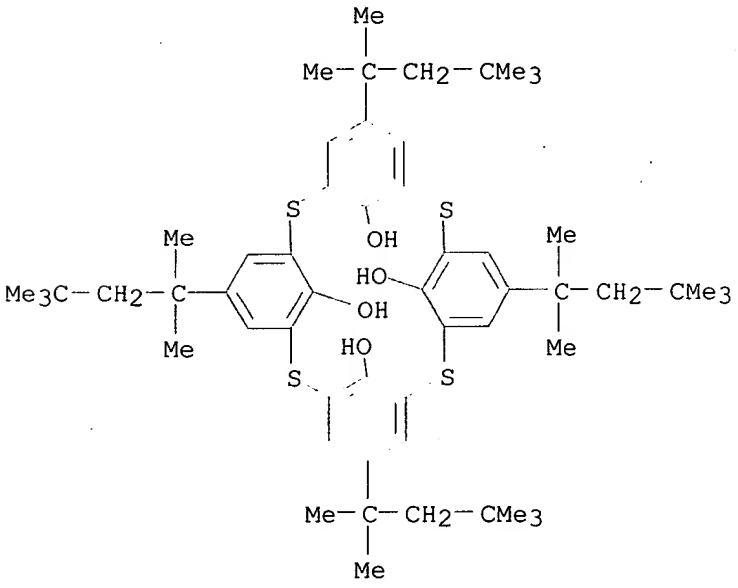
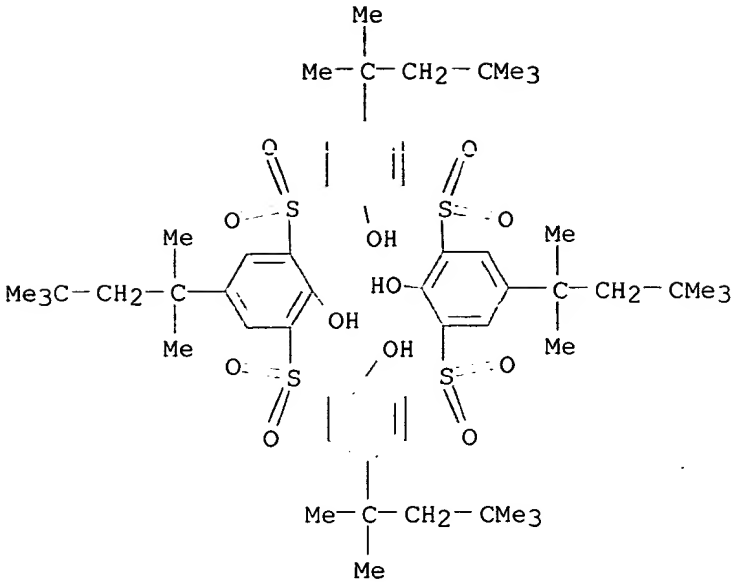
IT **182496-64-6DP**, Metal **complexes 215511-22-1DP**, Metal **complexes 362055-65-0DP**, Metal **complexes**
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); FORM (Formation, nonpreparative); PREP (Preparation); PROC (Process)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

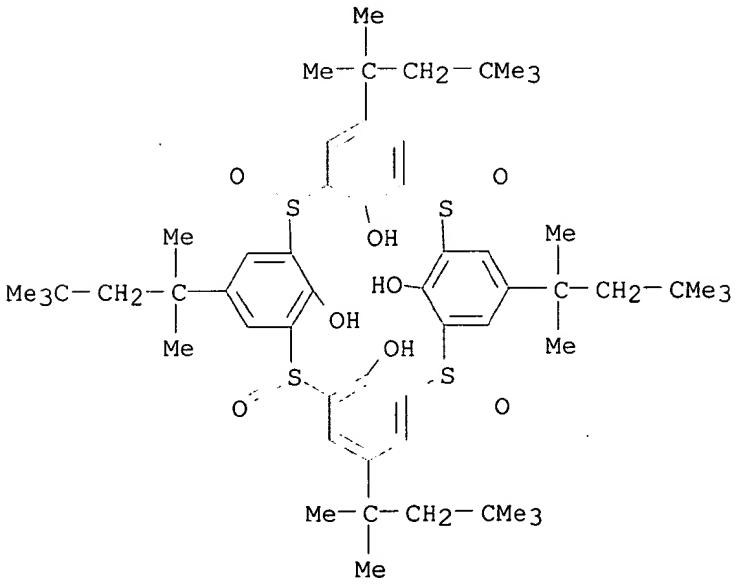
RN 182496-64-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)

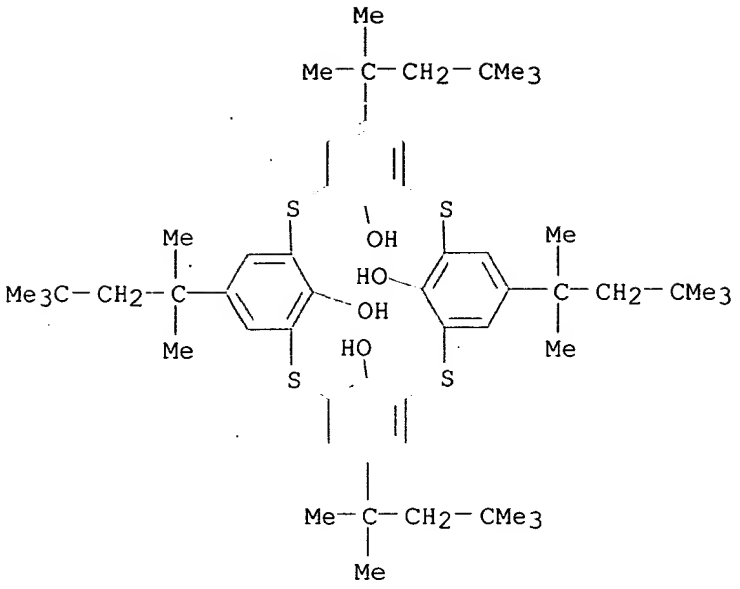


RN 362055-65-0 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)

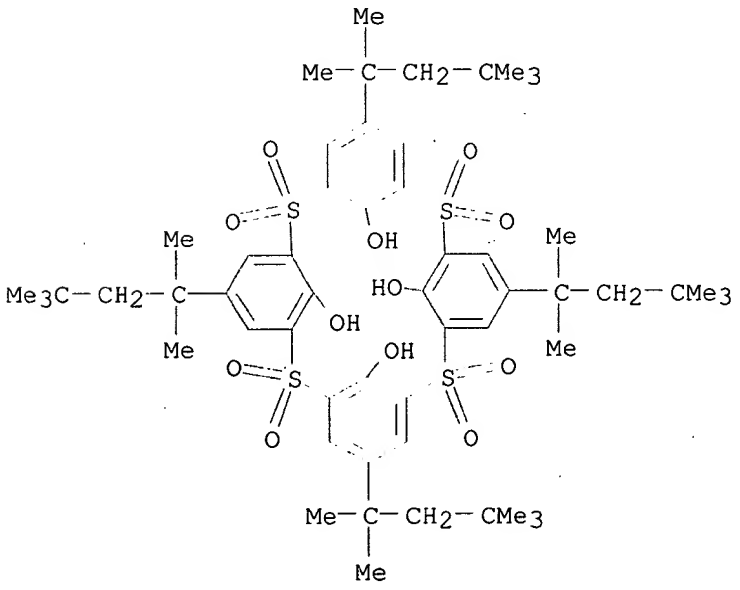


IT **182496-64-6**
RL: PEP (Physical, engineering or chemical process); RCT (Reactant); PROC (Process); RACT (Reactant or reagent)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
RN 182496-64-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX

NAME)



IT **215511-22-1P 362055-65-0P**
RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 362055-65-0 HCAPLUS
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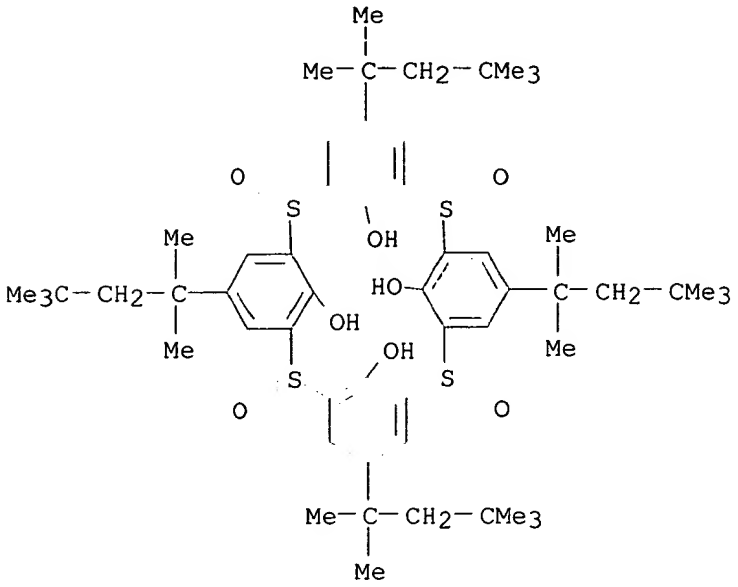
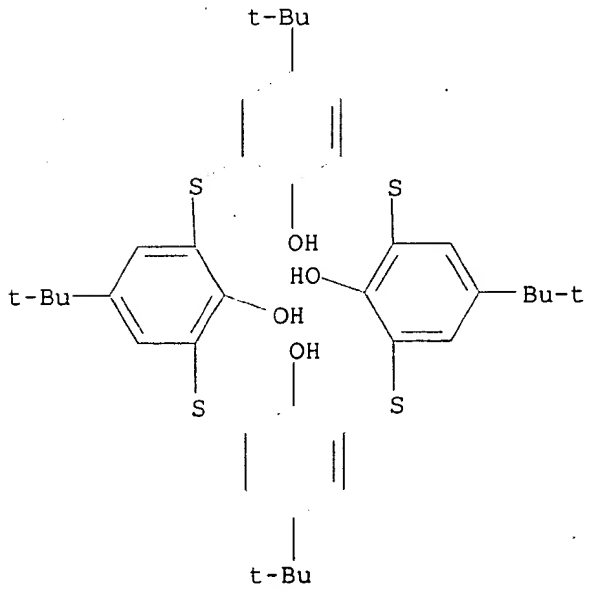
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



IT **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

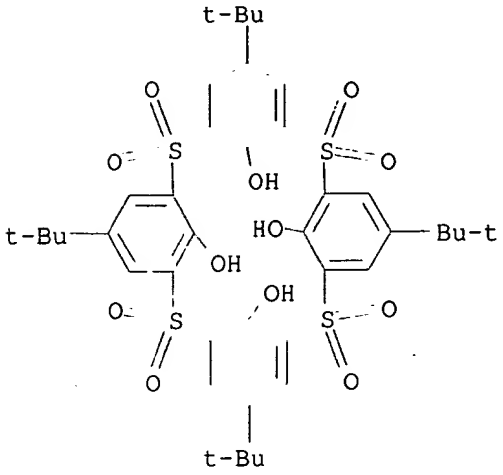


IT **204190-49-8P 221098-82-4P**
RL: SPN (Synthetic preparation); PREP (Preparation)

(preparation and metal ion **complexation** selectivities of thia-, sulfinyl- and sulfonylcalixarenes)

RN 204190-49-8 HCAPLUS

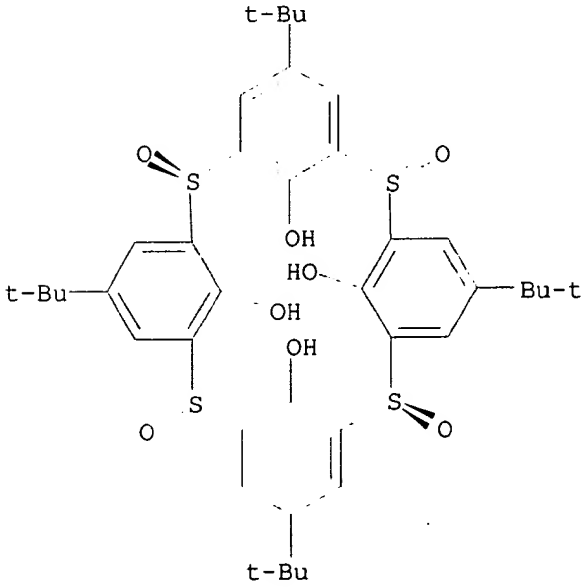
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 221098-82-4 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



L58 ANSWER 4 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN

AN 2000:685762 HCAPLUS

DN 134:53255

ED Entered STN: 29 Sep 2000
TI Peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on the modified ion-exchanger and its application to the determination of **hydrogen peroxide**
AU **Odo, Junichi**; **Kawahara, Nobuko**; Inomata, Yu; Inoue, Aya; **Takeya, Haruhiko**; **Miyanari, Setsuko**; **Kumagai, Hitoshi**
CS Faculty of Science, Okayama University of Science, Okayama, 700-0005, Japan
SO Analytical Sciences (2000), 16(9), 963-966
CODEN: ANSCEN; ISSN: 0910-6340
PB Japan Society for Analytical Chemistry
DT Journal
LA English
CC 9-2 (Biochemical Methods)
Section cross-reference(s): 7, 79, 80
AB The peroxidase-like catalytic activity of ion-exchangers modified with some metal **complexes** of thiacalix[4]arenetetrasulfonate (Me-TCAS, Me=Fe3+, Fe2+, Co2+, Mn2+, Cu2+, Zn2+ and Ni2+) was investigated based on a color reaction catalyzed by peroxidase. The ion-exchanger modified with Fe3+-TCAS showed the highest activity among the metal **complexes** tested, and was applied to the determination of **hydrogen peroxide**. The calibration curve for the ion-exchanger modified with Fe3+-TCAS was linear over the range from 10 to 100 μg of **hydrogen peroxide** in a 1 mL sample solution Moreover, the method using glucose oxidase and the ion-exchanger modified with Fe3+-TCAS was applied for the determination of glucose. The ion-exchanger modified with Fe3+-TCAS may be applicable for the determination of **hydrogen peroxide** in place of peroxidase.
ST peroxidase thiacalix arenetetrasulfonate ion exchanger **hydrogen peroxide** glucose
IT 50-99-7, D-Glucose, analysis **7722-84-1**, **Hydrogen peroxide**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
IT 83-07-8, 4-Aminoantipyrine 9003-99-0, Peroxidase
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
IT 9001-37-0, Glucose oxidase
RL: ARG (Analytical reagent use); CAT (Catalyst use); ANST (Analytical study); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
IT 14701-22-5DP, Ni2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 15158-11-9DP, Cu2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 15438-31-0DP, Fe2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 16397-91-4DP, Mn2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 20074-52-6DP, Fe3+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 22541-53-3DP, Co2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation 23713-49-7DP, Zn2+, **complexes** with thiacalix[4]arenetetrasulfonate, preparation **237770-97-7DP**, **complexes** with metal ions
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and

application to determination of **hydrogen peroxide**)
IT 373-02-4, Nickel diacetate 557-34-6, Zinc diacetate 638-38-0, Manganese diacetate 7447-39-4, Copper chloride (CuCl2), reactions 7705-08-0, Iron chloride (FeCl3), reactions 10045-89-3 10241-04-0, Cobalt chloride (CoCl3) **211561-04-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
RE.CNT 14 THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD
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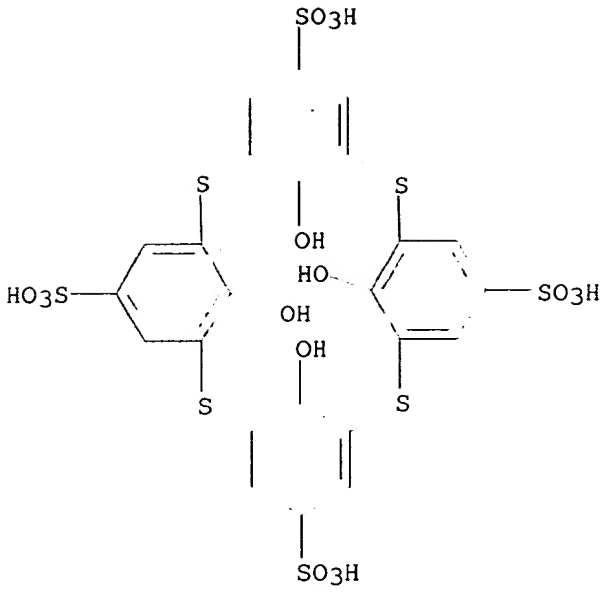
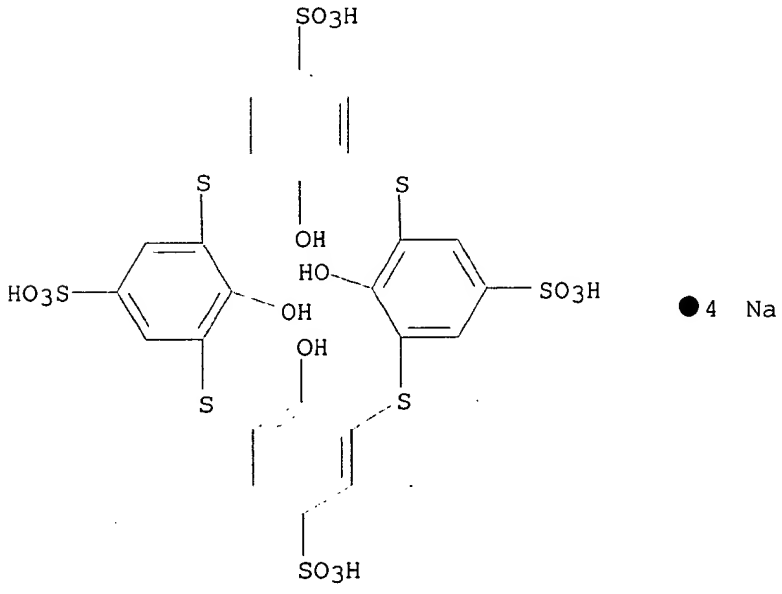
IT **7722-84-1**, **Hydrogen peroxide**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
RN 7722-84-1 HCAPLUS
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

HO—OH

IT **237770-97-7DP**, **complexes** with metal ions
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
RN 237770-97-7 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy- (9CI) (CA INDEX NAME)



IT **211561-04-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(peroxidase-like catalytic activity of metal **complexes** of thiacalix[4]arenetetrasulfonate on modified ion-exchanger and application to determination of **hydrogen peroxide**)
RN 211561-04-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)

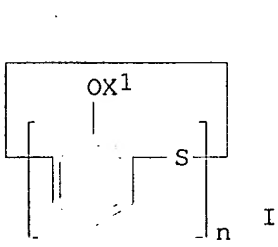


L58 ANSWER 5 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:428008 HCAPLUS
DN 133:43542

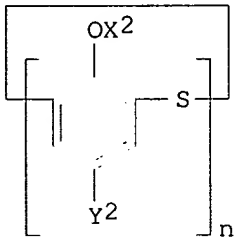
ED Entered STN: 27 Jun 2000
TI Preparation of cyclic phenol sulfide aminoalkyl derivatives, and agents and process for separation and recovery of **metals**
IN Hamada, Fumio; Narita, Miyuki; Takeya, Haruhiko; Miyanari, Setsuko; Kumagaya, Hitoshi
PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07D341-00
ICS C09K003-00
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 54, 60
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000178271	A2	20000627	JP 1998-375819	19981218 <--
PRAI JP 1998-375819		19981218 <--		

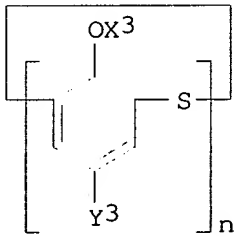
OS CASREACT 133:43542; MARPAT 133:43542
GI



I



II



III

AB Reactions of cyclic phenol sulfides I (X1 = H, alkyl; n = 4-8) with aldehydes and amines give cyclic phenol sulfide aminoalkyl derivs. II (X2 = H, alkyl; Y2 = H, RNR1R2; at least one of Y2 is RNR1R2; n = 4-8; R = alkylene, alkylcarbonyl; R1, R2 = H, alkyl; NR1R2 may form a heterocycle). **Metals** are separated and recovered by treatment with agents containing cyclic phenol sulfide aminoalkyl derivs. III (X3 = H, alkyl, acyl, alkylsulfonyl; Y3 = H, R3NR4R5; at least one of Y3 is R3NR4R5; Z = S, SO, SO2; n = 4-8; R3 = alkylene, alkylcarbonyl; R4, R5 = H, alkyl; NR4R5 may form a heterocycle). Reaction of 4-tert-butylphenol with S in the presence of NaOH and dealkylation of the product in the presence of AlCl3 gave I (X1 = H, n = 4), which was stirred with Me2NH and HCHO in 1,4-dioxane at 80° for 48 h to give II (X2 = H, Y2 = CH2NMe2, n = 4) (IV). A CHCl3 solution (10 mL) containing 5.0 + 10-4M IV was shaken with 10 mL aqueous solution containing 1.0 + 10-4M NaCl at room temperature for 10 min to show 85% extraction of Na. IV was also effective for extraction of K, Cr,

Ni, Cu, Cd, and Al from aqueous solns. containing chlorides of each **metal**
.

ST cyclic phenol sulfide aminoalkyl prepn; **metal** extn recovery
cyclic phenol sulfide

IT Wastewater treatment
(extraction; preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction
and recovery of **metals**)

IT **Metals**, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

IT **276245-96-6P 276245-97-7P 276245-98-8P**
276245-99-9P 276246-00-5P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

IT **182496-55-5P 182496-69-1P**
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

IT 540-72-7P, Sodium thiocyanate 557-42-6P, Zinc thiocyanate 7446-70-0P, Aluminum chloride (AlCl3), preparation 7447-39-4P, Copper(II) chloride, preparation 7447-40-7P, Potassium chloride, preparation 7647-14-5P, Sodium chloride, preparation 7718-54-9P, Nickel chloride, preparation 10025-73-7P, Chromium(III) chloride 10108-64-2P, Cadmium chloride
RL: PRP (Properties); PUR (Purification or recovery); RCT (Reactant); REM (Removal or disposal); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

IT 7429-90-5P, Aluminum, preparation **7440-02-0P**, Nickel, preparation **7440-09-7P**, Potassium, preparation **7440-23-5P**, Sodium, preparation **7440-43-9P**, Cadmium, preparation **7440-47-3P**, Chromium, preparation **7440-50-8P**, Copper, preparation **7440-66-6P**, Zinc, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

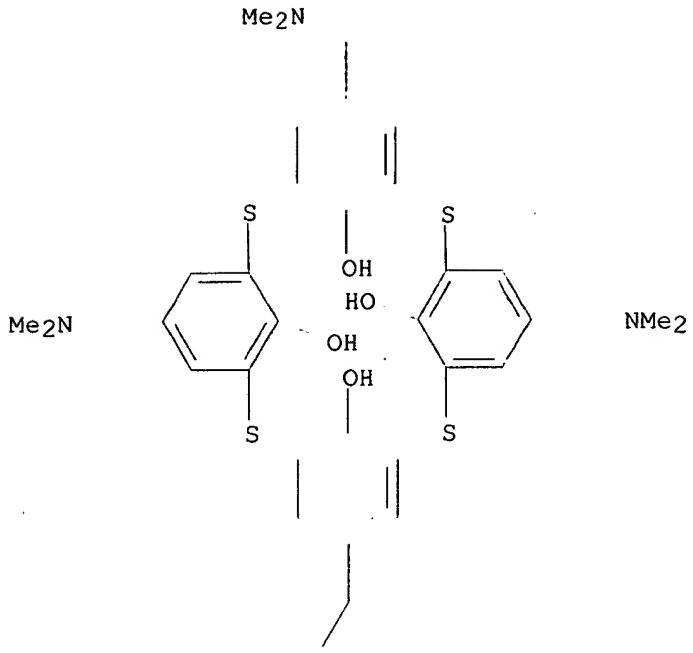
IT 50-00-0, Formaldehyde, reactions 98-54-4 109-01-3, 1-Methylpiperazine 109-89-7, Diethylamine, reactions 110-89-4, Piperidine, reactions 110-91-8, Morpholine, reactions 124-40-3, Dimethylamine, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

IT **276245-96-6P 276245-97-7P 276245-98-8P**
276245-99-9P 276246-00-5P
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)

RN 276245-96-6 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis[(dimethylamino)methyl]- (9CI) (CA INDEX NAME)

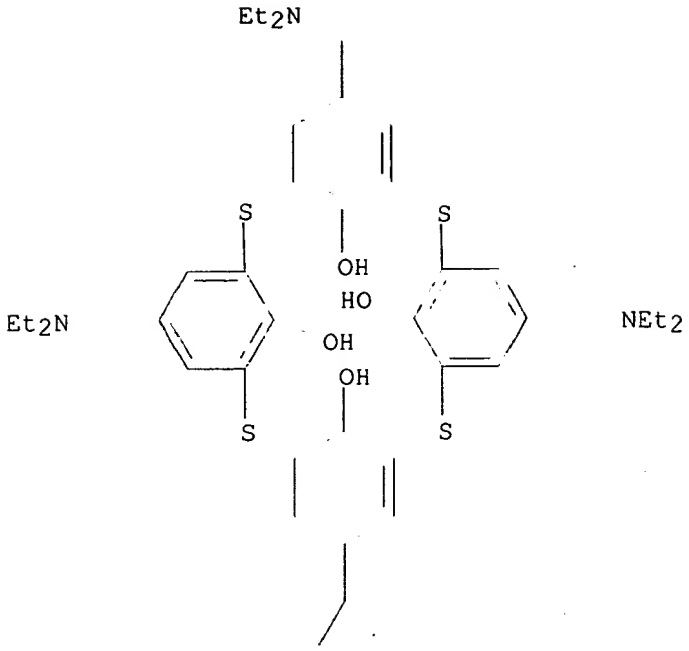
PAGE 1-A



PAGE 2-A

RN 276245-97-7 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis[(diethylamino)methyl]- (9CI) (CA INDEX NAME)

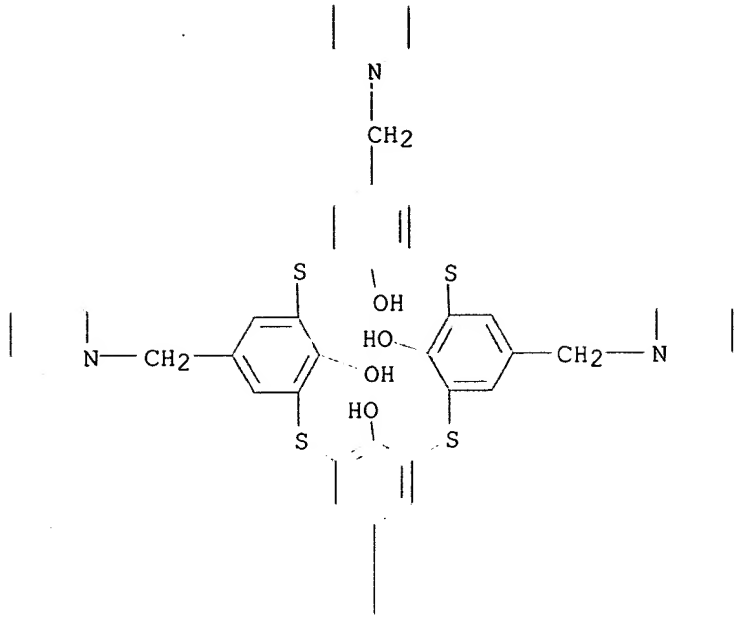
PAGE 1-A



PAGE 2-A

RN 276245-98-8 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1-piperidinylmethyl)- (9CI) (CA INDEX NAME)

PAGE 1-A



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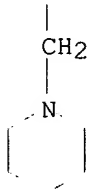

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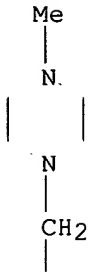
PAGE 1-A



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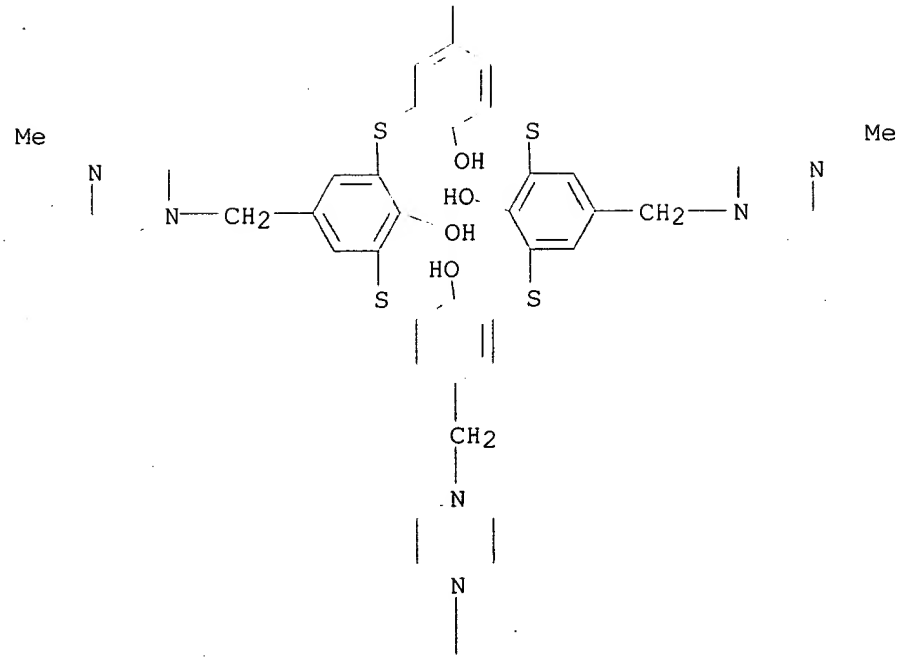
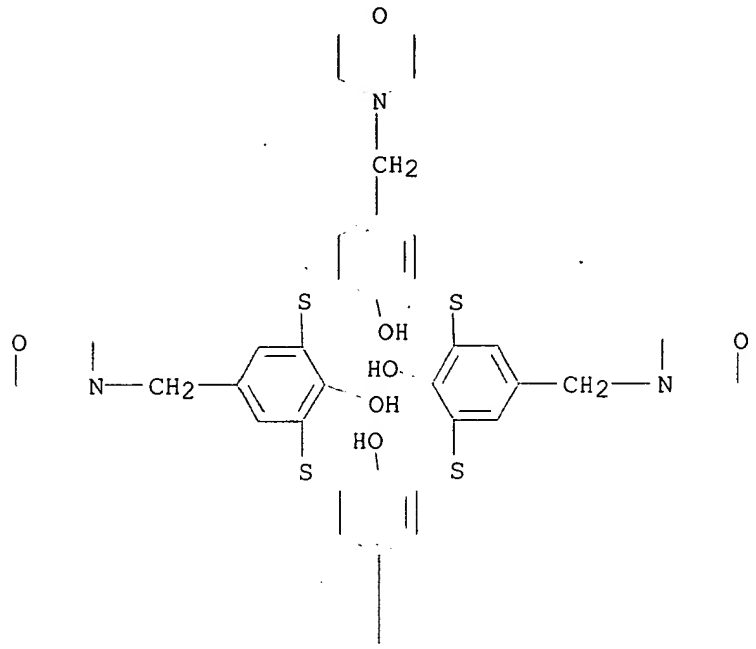


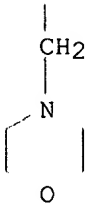
PAGE 3-A

RN 276246-00-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(4-morpholinylmethyl)- (9CI) (CA INDEX NAME)

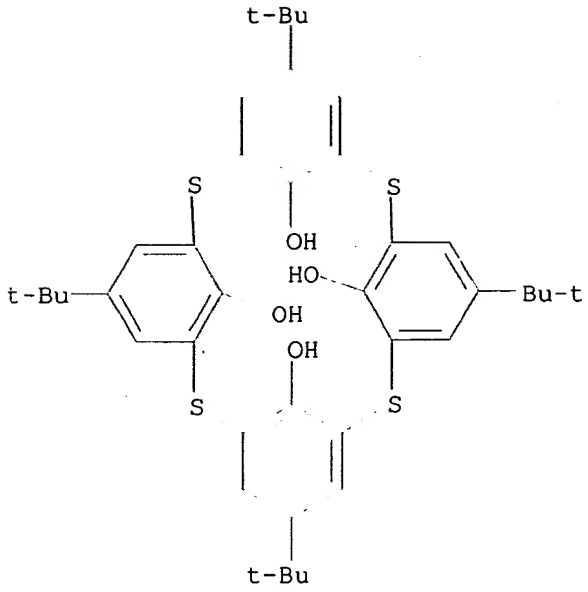
PAGE 1-A



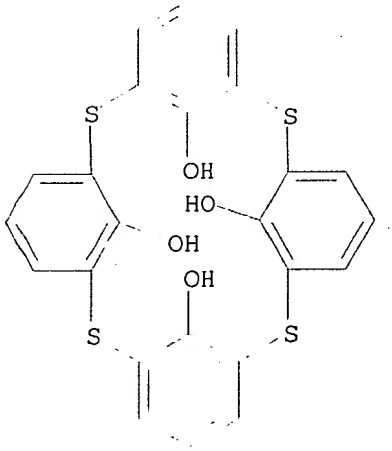
PAGE 2-A



IT **182496-55-5P 182496-69-1P**
RL: IMF (Industrial manufacture); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



RN 182496-69-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol (9CI) (CA INDEX NAME)



IT **7440-02-0P**, Nickel, preparation **7440-09-7P**, Potassium, preparation **7440-23-5P**, Sodium, preparation **7440-43-9P**, Cadmium, preparation **7440-47-3P**, Chromium, preparation **7440-50-8P**, Copper, preparation **7440-66-6P**, Zinc, preparation
RL: PUR (Purification or recovery); REM (Removal or disposal); PREP (Preparation); PROC (Process)
(preparation of cyclic phenol sulfide aminoalkyl derivs. for extraction and recovery of **metals**)
RN 7440-02-0 HCAPLUS
CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-09-7 HCAPLUS
CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-23-5 HCAPLUS
CN Sodium (8CI, 9CI) (CA INDEX NAME)

Na

RN 7440-43-9 HCAPLUS
CN Cadmium (8CI, 9CI) (CA INDEX NAME)

Cd

RN 7440-47-3 HCAPLUS
CN Chromium (8CI, 9CI) (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

L58 ANSWER 6 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:277973 HCAPLUS
DN 132:302530
ED Entered STN: 28 Apr 2000
TI Preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising the same, and analytical methods for **hydrogen peroxide**
IN **Odo, Junichi; Kawahara, Nobuko; Akashi, Koichi ; Miyano, Sotaro; Iki, Nobuhiko; Morohashi, Naoya; Takeya, Haruhiko; Miyanari, Setsuko; Kumagai, Hitoshi**
PA **Cosmo** Research Institute, Japan; **Cosmo** Oil Co., Ltd.; et al.
SO PCT Int. Appl., 48 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C07D341-00
ICS B01J031-22; G01N021-59; C07C205-22; C07C201-12; C07D231-46;

C07B033-00; C07B037-06
CC 78-7 (Inorganic Chemicals and Reactions)
Section cross-reference(s): 67
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE	
PI	WO 2000023435	A1	20000427	WO 1999-JP5819	19991021	<--
	W: US					
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE					
	JP 2000191658	A2	20000711	JP 1999-144750	19990525	<--
	EP 1123930	A1	20010816	EP 1999-949349	19991021	<--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI					
	EP 1327619	A1	20030716	EP 2003-4996	19991021	<--
	R: DE, FR, GB, IT					
	EP 1327618	A1	20030716	EP 2003-4997	19991021	<--
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PRAI	JP 1998-318333	A	19981022	<--		
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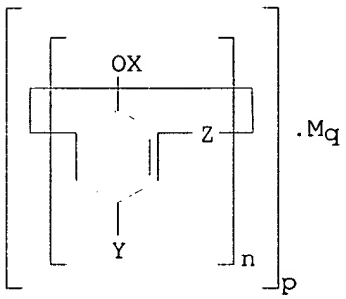
OS MARPAT 132:302530
GI



I

AB Described are thiacalixarene-**metal complexes** (I; X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = H, hydrocarbyl, halohydrocarbyl, halo, acyl, HO, CO2H, amido, NH2, NO2, cyano, SO2Cl, alkoxysulfonyloxy, SO3H; Z = Sm, SO, SO2; m = 1-7; n = 4-8; M = group 8, 1A-7A, and 1B, or 3B **metal**; p, q = composition ratio which is >1) which serve as catalysts in various chemical reactions or as materials in the information-electronics industry, exhibit peroxidase-like activities or high hydrolytic activities for phosphoric diesters, and can easily hybridize with base sequence recognition sites; and novel anal. methods for **hydrogen peroxide** with the **complexes** exhibiting peroxidase-like activities. The above **metal complexes** are prepared by bringing a cyclic phenol sulfide represented by general formula (II; X, Y, Z, n = same as above) into contact with at least one member selected from among Group 8, 1A to 7A, 1B and 3B **metals**, and are usable as catalysts for the oxidation with **hydrogen peroxide** or those for the hydrolysis of phosphoric diesters, the hydrolysis catalysts being useful also in the anal. for **hydrogen peroxide**. Thus, 4-tert-butylphenol 45.2, elemental sulfur 144.4, and NaOH 3.0 g were gradually heated to 230° with stirring and further stirred for 2 h with removal of H2O and H2S to give 4.32 g II (X = H, Y1 = tert-Bu, Z1 = S, m = 1, n = 4). A

solution of the latter compound in CHCl3 (1+10-3 M, 10 mL) and a solution of MnCl2, FeCl2, or CoCl2 in Tris-HCl buffer (pH 8.0) (1+10-3 M, 10 ML) were shaken at room temperature for 24 h. The CHCl3 layer was separated and CHCl3 was distilled off to give I (X = H, Y = tert-Bu, Z = S, m = 1, n = 4, p = 1, q = 1, M = Mn), I (M = Fe), and I (M = Co) as a white, purple, and yellow-green powder, resp.

ST cyclic phenol sulfide **metal complex** prepn hydrolysis catalyst; phosphoric diester hydrolysis catalyst; **hydrogen peroxide** analysis; oxidn catalyst; thiacalixarene **metal complex** prepn

IT Metacyclophanes
RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(calixarenes; preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT Oxidation catalysts
Saponification catalysts
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT 9003-99-0P, Peroxidase
RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(artificial; preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT **7722-84-1, Hydrogen peroxide**, reactions
RL: ANT (Analyte); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT **7439-89-6DP**, Iron, **complex** with thiacalix[4]arene derivative, preparation **7439-95-4DP**, Magnesium, **complex** with thiacalix[4]arene derivative, preparation **7439-96-5DP**, Manganese, **complex** with thiacalix[4]arene derivative, preparation **7440-39-3DP**, Barium, **complex** with thiacalix[4]arene derivative, preparation **7440-45-1DP**, Cerium, **complex** with thiacalix[4]arene derivative, preparation **7440-48-4DP**, Cobalt, **complex** with thiacalix[4]arene derivative, preparation 9012-76-4DP, Chitosan, cerium-cyclic phenol sulfide **complex** supported on **182496-55-5DP**, **complex** with cobalt **182496-55-5DP**, **complex** with iron **182496-55-5DP**, **complex** with manganese **204190-47-6DP**, **complex** with barium **204190-47-6DP**, **complex** with magnesium **211561-04-5DP**, **complex** with cerium **211561-04-5DP**, **complex** with cerium, supported on DEAE cellulofine A-500 **211561-04-5DP**, **complex** with cerium, supported on DEAE cellulofine-sf **211561-04-5DP**, **complex** with cerium, supported on chitosan **211561-04-5DP**, **complex** with iron **211561-04-5DP**, **complex** with iron, supported on DEAE cellulofine-sf
RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT 98-54-4, 4-tert-Butylphenol 4043-96-3, Sodium bis(p-nitrophenyl)phosphate 7487-88-9, Magnesium sulfate, reactions 7646-79-9, Cobalt(II) chloride, reactions 7758-94-3, Iron(II) chloride 7773-01-5, Manganese(II) chloride 7783-85-9, Diammonium iron(II) sulfate

hexahydrate 9012-76-4, Chitosan 10139-51-2, Ceric ammonium nitrate 14760-23-7, Bis(bis(trimethylsilyl)amido)cobalt 17194-00-2, Barium hydroxide
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

IT **182496-55-5P 204190-47-6P 211561-04-5DP**, supported on DEAE cellulofine-sf **211561-04-5P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

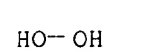
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Cosmo Research Institute; JP 09227553 A 1997 HCAPLUS
(2) Cosmo Research Institute; JP 1077281 A 1998
(3) Cosmo Research Institute; JP 1077282 A 1998
(4) Cosmo Research Institute; WO 9929683 A1 1999 HCAPLUS
(5) Iki, N; Bull Chem Soc Jpn 1998, V71(7), P1597 HCAPLUS
(6) Iki, N; Chem Lett 1998, 7, P625 HCAPLUS
(7) Iki, N; Tetrahedron Lett 1998, V39(41), P7559 HCAPLUS

IT **7722-84-1**, **Hydrogen peroxide**, reactions
RL: ANT (Analyte); RCT (Reactant); ANST (Analytical study); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

RN 7722-84-1 HCAPLUS
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)



IT **7439-89-6DP**, Iron, **complex** with thiacalix[4]arene derivative, preparation **7439-95-4DP**, Magnesium, **complex** with thiacalix[4]arene derivative, preparation **7439-96-5DP**, Manganese, **complex** with thiacalix[4]arene derivative, preparation **7440-39-3DP**, Barium, **complex** with thiacalix[4]arene derivative, preparation **7440-45-1DP**, Cerium, **complex** with thiacalix[4]arene derivative, preparation **7440-48-4DP**, Cobalt, **complex** with thiacalix[4]arene derivative, preparation **182496-55-5DP**, **complex** with cobalt **204190-47-6DP** , **complex** with barium **211561-04-5DP**, **complex** with cerium
RL: ARG (Analytical reagent use); CAT (Catalyst use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)

RN 7439-89-6 HCAPLUS
CN Iron (7CI, 8CI, 9CI) (CA INDEX NAME)

RN 7439-95-4 HCAPLUS
CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

RN 7439-96-5 HCAPLUS
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-39-3 HCAPLUS
CN Barium (8CI, 9CI) (CA INDEX NAME)

Ba

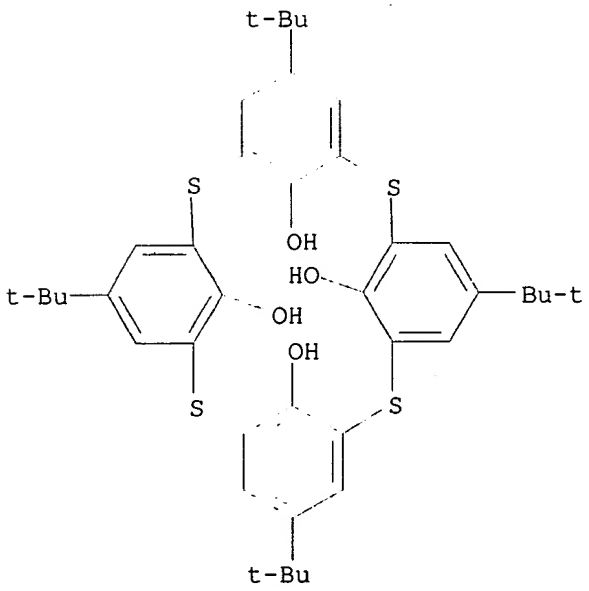
RN 7440-45-1 HCAPLUS
CN Cerium (8CI, 9CI) (CA INDEX NAME)

Ce

RN 7440-48-4 HCAPLUS
CN Cobalt (8CI, 9CI) (CA INDEX NAME)

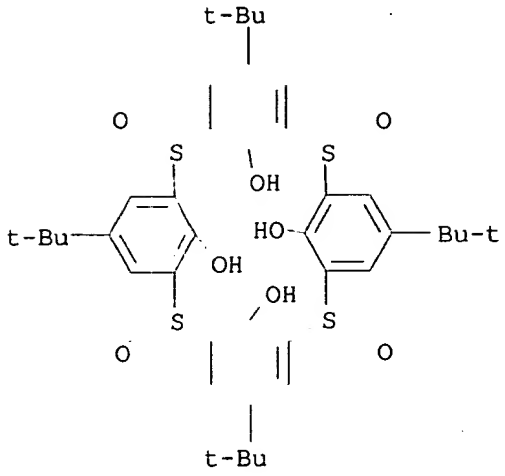
Co

RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

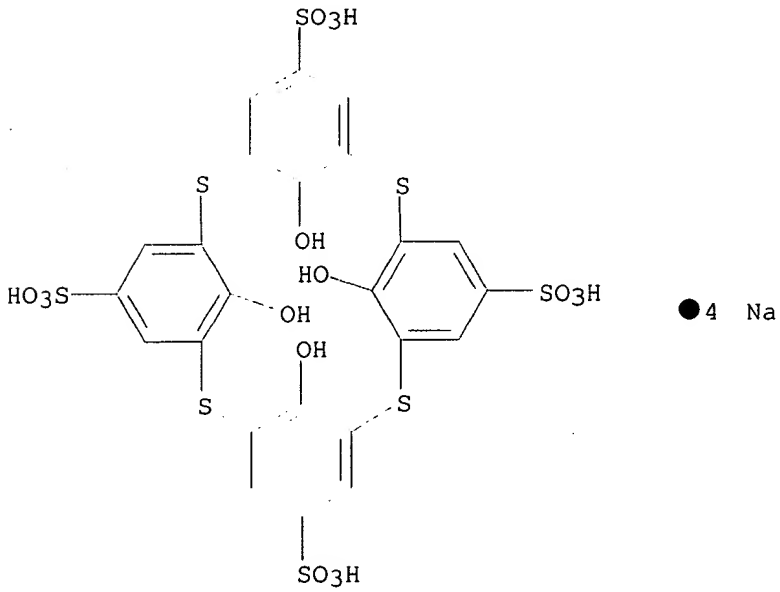


RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)

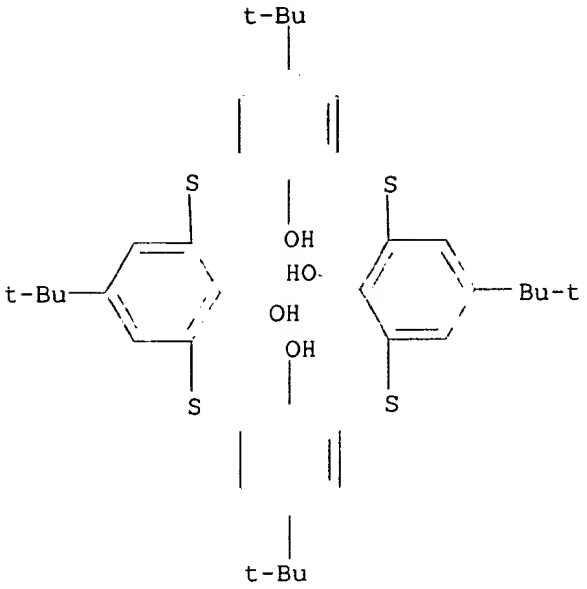


RN 211561-04-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)

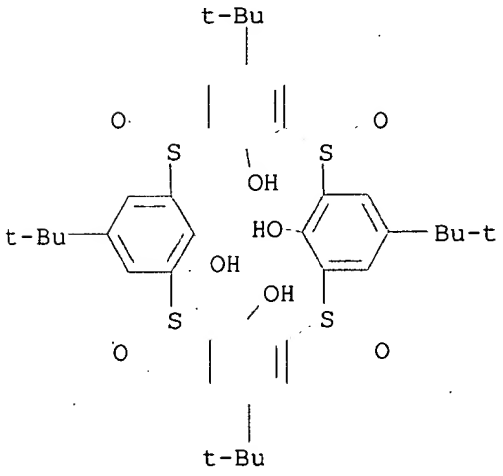


IT **182496-55-5P 204190-47-6P 211561-04-5DP,** supported on DEAE cellulofine-sf **211561-04-5P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of cyclic phenol sulfide-**metal complexes**, catalysts comprising same, and anal. methods for **hydrogen peroxide**)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

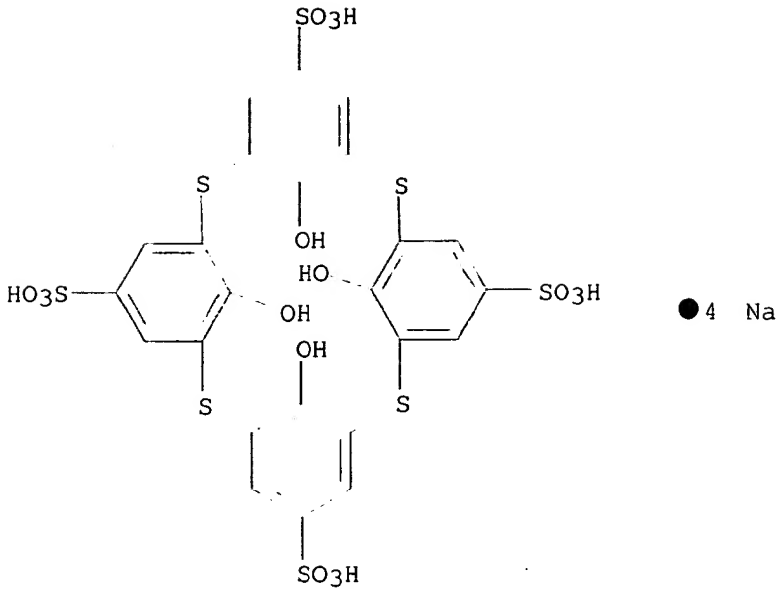
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



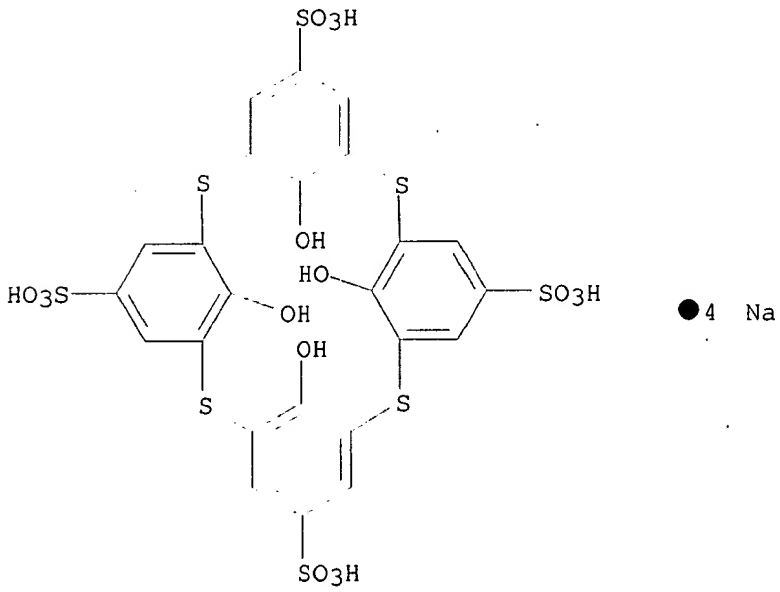
RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 211561-04-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)



RN 211561-04-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-5,11,17,23-tetrasulfonic acid, 25,26,27,28-tetrahydroxy-, tetrasodium salt (9CI) (CA INDEX NAME)

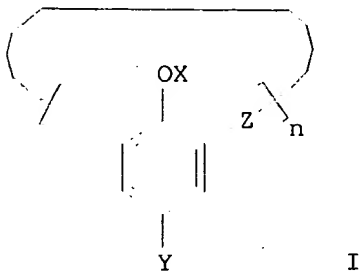


L58 ANSWER 7 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:249577 HCAPLUS
DN 132:296459
ED Entered STN: 19 Apr 2000
TI Agent containing cyclic phenol sulfide for solvent extraction of **metals** and extraction method using it
IN Miyano, Sotaro; Iki, Nobuhiko; Morohashi, Naoya; Sugawara, Atsushi; Miyanari, Setsuko; Kumagaya, Hitoshi

PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM B01D011-04
ICS C09K003-00; C07D341-00
CC 54-3 (Extractive Metallurgy)
Section cross-reference(s): 25
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000107505	A2	20000418	JP 1999-62375	19990309 <--
PRAI JP 1998-233484		19980806 <--		

OS MARPAT 132:296459
GI



I

AB The title agent for extraction of alkali **metals**, alkaline earth **metals**, and Group IIIA elements contains cyclic phenol sulfides I (X = H, hydrocarbyl, acyl, carboxyalkyl, carbamoylalkyl; Y = hydrocarbyl; Z = sulfinyl, sulfonyl; n = 4-8). The method for extraction of alkali **metals**, alkaline earth **metals**, and Group IIIA elements by using the agent is also claimed. Also claimed is another extraction method by using the agent and/or a transition **metal**-extracting agent made of cyclic phenol sulfides I in which Z is sulfide for selectively extracting alkali **metals**, alkaline earth **metals**, and Group IIIA elements and/or transition **metals** from mixture solns. Objective **metals** can be selectively extracted in high efficiency by using the agents.

ST alkali **metal** solvent extn cyclic phenol sulfide; alk earth **metal** solvent extn cyclic phenol sulfide; Group IIIA element solvent extn cyclic phenol sulfide

IT Solvent extraction
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT Alkali **metals**, preparation
Alkaline earth **metals**
Group IIIA elements
RL: PUR (Purification or recovery); PREP (Preparation)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT **204190-47-6P 215511-22-1P**
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT **182496-55-5P**

RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT 68959-11-5 69103-69-1
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

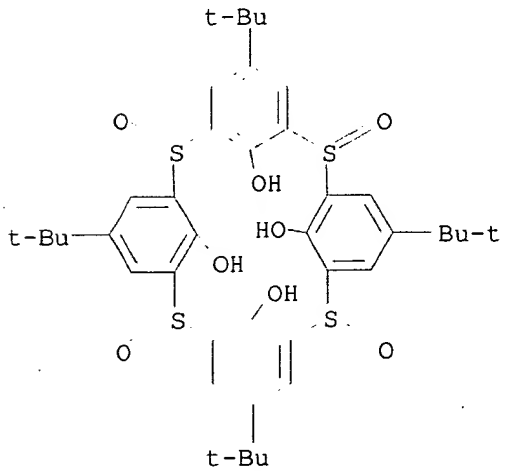
IT **182496-64-6P**
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT 7429-90-5P, Aluminum, preparation **7440-09-7P**, Potassium, preparation **7440-66-6P**, Zinc, preparation **7440-70-2P**, Calcium, preparation 7786-30-3P, Magnesium chloride, preparation 10043-52-4P, Calcium chloride, preparation 10361-37-2P, Barium chloride, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

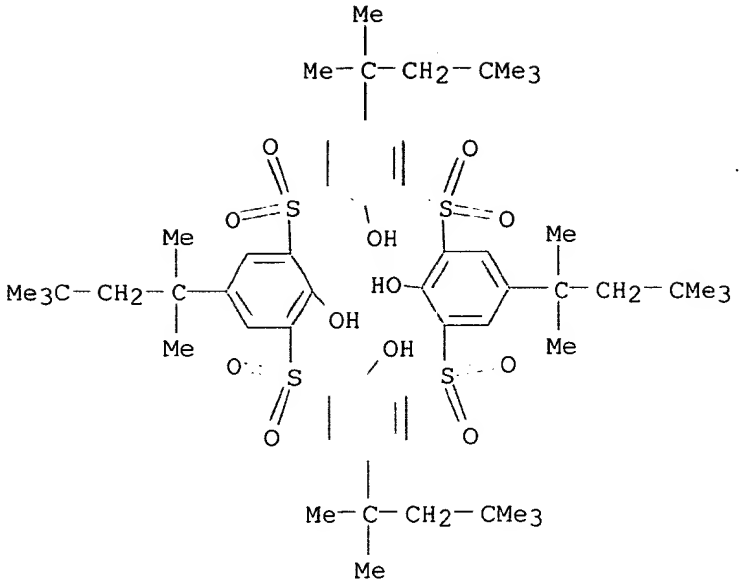
IT 98-54-4, 4-tert-Butylphenol 140-66-9, 4-tert-Octylphenol 7704-34-9, Sulfur, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

IT **204190-47-6P 215511-22-1P**
RL: IMF (Industrial manufacture); NUU (Other use, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)

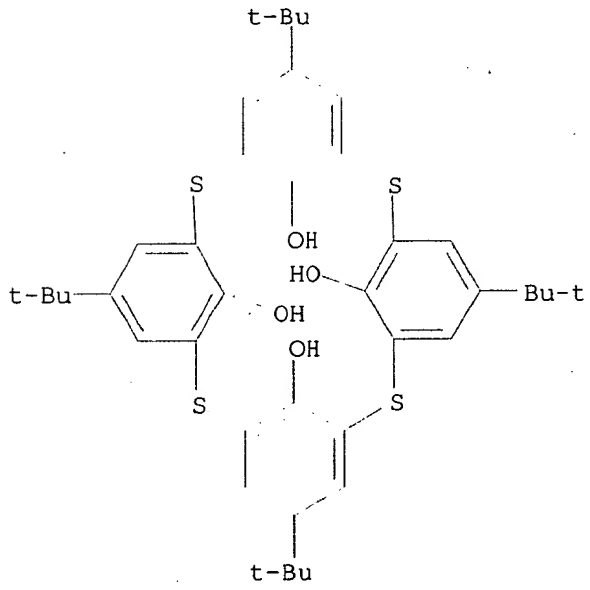
RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)

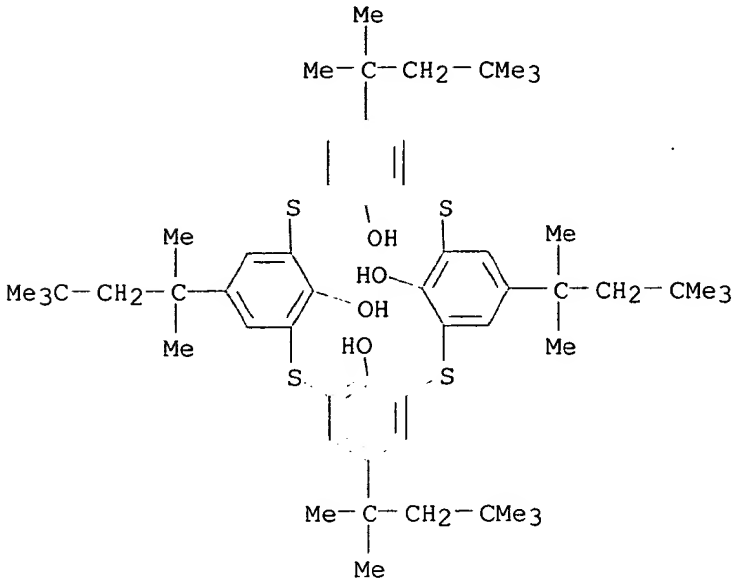


IT **182496-55-5P**
RL: NUU (Other use, unclassified); PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IT **182496-64-6P**
RL: PNU (Preparation, unclassified); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(solvent extraction of alkali **metal**, alkaline earth **metal**,

and Group IIIA element by using agent containing cyclic phenol sulfide)
RN 182496-64-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



IT **7440-09-7P**, Potassium, preparation **7440-66-6P**, Zinc, preparation **7440-70-2P**, Calcium, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(solvent extraction of alkali **metal**, alkaline earth **metal**, and Group IIIA element by using agent containing cyclic phenol sulfide)
RN 7440-09-7 HCAPLUS
CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 7440-70-2 HCAPLUS
CN Calcium (8CI, 9CI) (CA INDEX NAME)

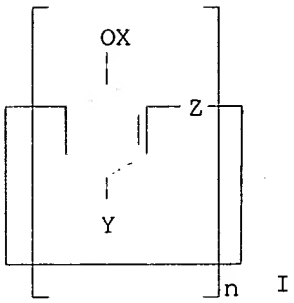
Ca

L58 ANSWER 8 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 2000:181026 HCAPLUS
DN 132:207853
ED Entered STN: 21 Mar 2000
TI Agents and method for extraction of porphyrins and their cyclic phenol

sulfide **complexes**
IN Segawa, Hiroshi; Hirakawa, Kazutaka; Takeya, Haruhiko; Kumagaya, Hitoshi
PA Cosmo Sogo Kenkyusho K. K., Japan; Cosmo Oil Co., Ltd.
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM C07D341-00
ICS C07D487-22; C07B063-02
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 26
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000080093	A2	20000321	JP 1998-262271	19980902 <--
PRAI JP 1998-262271		19980902 <--		

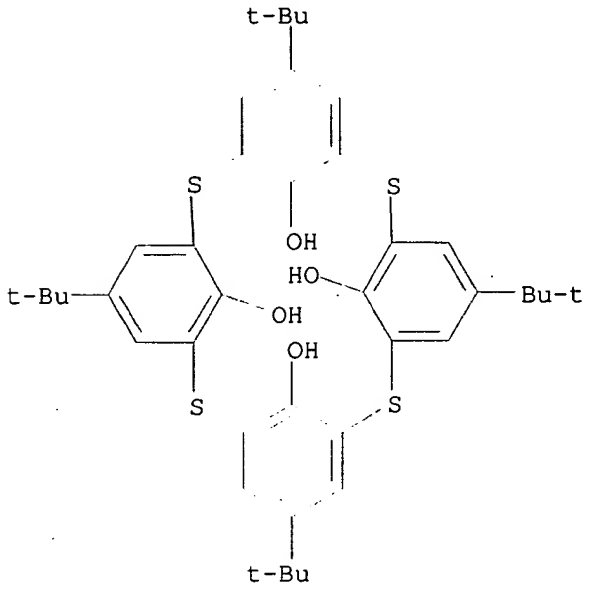
OS MARPAT 132:207853
GI



I

AB Title agents comprise cyclic phenol sulfides I (X = H, hydrocarbyl, acyl; ≥1 X = H; Y = H, hydrocarbyl, halohydrocarbyl, halo, acyl, OH, etc.; Z = sulfido, sulfinyl, sulfonyl; n = 4-8). 4-Tert-butylphenol (45.2 g) was reacted with S in the presence of NaOH at ≤230° for 6 h to give 4.32 g I (X = H, Y = t-Bu, Z = S, n = 4). Tetrakis(4-N-methylpyridinium)porphyrin was extracted with CH2Cl2 containing I (X = H, Y = t-Bu, Z = S, n = 4).
ST porphyrin extn cyclic phenol sulfide; **complex** porphyrin cyclic phenol sulfide
IT Extractants
(extraction of porphyrin with their cyclic phenol sulfides)
IT **Metalloporphyrins**
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of porphyrin with their cyclic phenol sulfides)
IT Cyclophanes
RL: RCT (Reactant); RACT (Reactant or reagent)
(extraction of porphyrin with their cyclic phenol sulfides)
IT 48242-70-2P
RL: PUR (Purification or recovery); PREP (Preparation)
(48242-70-2; extraction of porphyrin with their cyclic phenol sulfides)
IT **182496-55-5P**
RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(extraction of porphyrin with their cyclic phenol sulfides)
IT 38673-65-3P 40603-58-5P 69458-19-1P 79619-74-2P
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of porphyrin with their cyclic phenol sulfides)

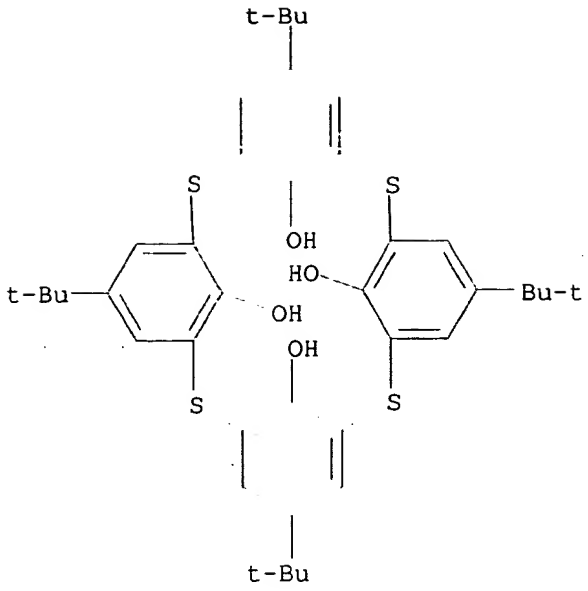
IT 98-54-4, 4-tert-Butylphenol
RL: RCT (Reactant); RACT (Reactant or reagent)
(extraction of porphyrin with their cyclic phenol sulfides)
IT **260449-08-9P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(extraction of porphyrin with their cyclic phenol sulfides)
IT **182496-55-5P**
RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(extraction of porphyrin with their cyclic phenol sulfides)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IT **260449-08-9P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(extraction of porphyrin with their cyclic phenol sulfides)
RN 260449-08-9 HCAPLUS
CN Zinc(4+), [[4,4',4'',4'''-(21H,23H-porphine-5,10,15,20-tetrayl-κN21,κN22,κN23,κN24)tetrakis[1-methylpyridiniumato]](2-)]-, (SP-4-1)-, compd. with 5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol (1:1) (9CI) (CA INDEX NAME)

CM 1

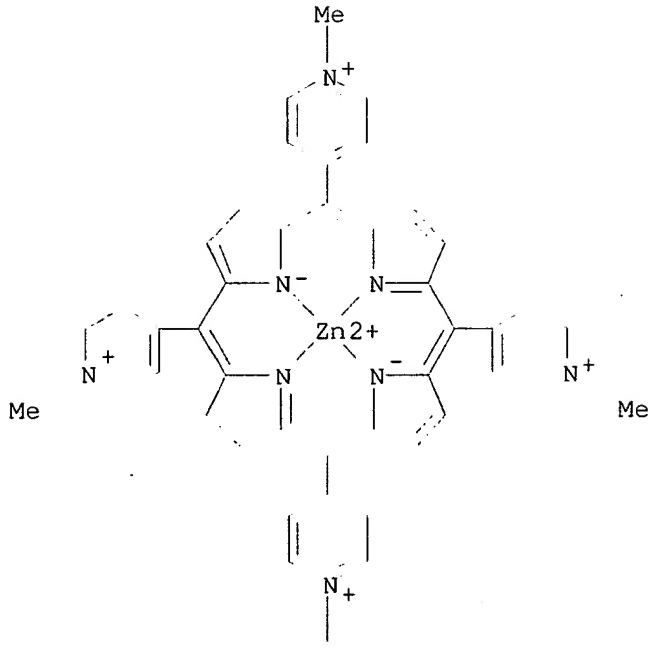
CRN 182496-55-5
CMF C40 H48 O4 S4



CM 2

CRN 40603-58-5
CMF C44 H36 N8 Zn
CCI CCS

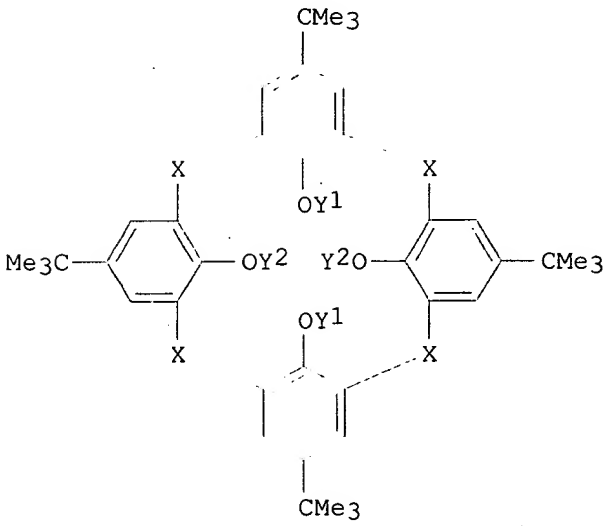
PAGE 1-A



PAGE 2-A

Me

L58 ANSWER 9 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:655205 HCAPLUS
DN 132:35686
ED Entered STN: 15 Oct 1999
TI Novel molecular receptors based on a thiacalix[4]arene platform. Preparations of the di- and tetracarboxylic acid derivatives and their binding properties towards transition **metal** ions
AU Iki, Nobuhiko; Morohashi, Naoya; Narumi, Fumitaka; Fujimoto, Toyohisa; Suzuki, Tomohiro; Miyano, Sotaro
CS Department of Biomolecular Engineering, Graduate School of Engineering, Tohoku University, Sendai, 980-8579, Japan
SO Tetrahedron Letters (**1999**), 40(41), 7337-7341
CODEN: TELEAY; ISSN: 0040-4039
PB Elsevier Science Ltd.
DT Journal
LA English
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 79
GI



I

AB Novel mol. receptors, cone- and 1,3-alternate-tetracarboxylic acid (I; X = S, Y1 = Y2 = CH2COOH) and syn-A,C-dicarboxylic acid (I; X = S, Y1 = CH2COOH, Y2 = H), were prepared by hydrolysis of the ester moiety of the tetra- (I; X = S, Y1 = Y2 = CH2COOEt) and diethers (I; X = S, Y1 = CH2COOEt, Y2 = H), obtained by regio- and conformation-selective O-alkylation of the phenolic oxygens of thiacalix[4]arene (I; X = S, Y1 = Y2 = H) with Et bromoacetate. The binding ability of cone- and 1,3-alternate-I (X = S, Y1 = Y2 = CH2COOH), syn-I (X = S, Y1 = CH2COOH, Y2 = H), as well as cone-shaped, methylene-bridged tetracarboxylic acid (I; X = CH2, Y1 = Y2 = CH2COOH) toward transition **metal** ions was investigated by solvent extraction and showed that the selectivity for the ions

depends upon the bridging sulfur, carboxylate group, and the conformation.
ST thiacalixarene dicarboxylic tetracarboxylic acid prepn
complexation metal; extn **metal** ion
thiacalixarene dicarboxylic tetracarboxylic acid
IT Transition **metals**, preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(ions; extraction by thiacalix[4]arene di- and tetracarboxylic acids)
IT Extraction
(of transition **metal** ions by thiacalix[4]arene di- and tetracarboxylic acids)
IT 105-36-2, Ethyl bromoacetate
RL: RCT (Reactant); RACT (Reactant or reagent)
(etherification of thiacalixarene by)
IT **14701-22-5P**, Nickel(2+), preparation **15158-11-9P**, Copper(2+), preparation **20074-52-6P**, Iron(3+), preparation **22541-53-3P**, Cobalt(2+), preparation **23713-49-7P**, Zinc(2+), preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(extraction by thiacalix[4]arene di- and tetracarboxylic acids)
IT 113215-72-8 **182496-55-5**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(extraction of transition **metal** ions by)
IT **252253-24-0 252287-26-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of)
IT **209472-17-3P 252287-27-7P 252287-36-8P**
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation and extraction of transition **metal** ions by)
RE.CNT 11 THERE ARE 11 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Akdas, H; Tetrahedron Lett 1999, V40, P2113 HCAPLUS
(2) Araki, K; Chem Lett 1989, P1747 HCAPLUS
(3) Iki, N; Bull Chem Soc Jpn 1998, V71, P1597 HCAPLUS
(4) Iki, N; Chem Lett 1998, P1065 HCAPLUS
(5) Iki, N; Chem Lett 1998, P625 HCAPLUS
(6) Iki, N; Chem Lett 1999, P219 HCAPLUS
(7) Iki, N; J Chem Soc Perkin Trans 2 1998, P2745 HCAPLUS
(8) Iwamoto, K; Chem Lett 1991, P473 HCAPLUS
(9) Kumagai, H; Tetrahedron Lett 1997, V38, P3971 HCAPLUS
(10) Narumi, F; Enantiomer in press
(11) Ogata, M; J Am Chem Soc 1994, V116, P4505 HCAPLUS
IT **14701-22-5P**, Nickel(2+), preparation **15158-11-9P**, Copper(2+), preparation **20074-52-6P**, Iron(3+), preparation **22541-53-3P**, Cobalt(2+), preparation **23713-49-7P**, Zinc(2+), preparation
RL: ANT (Analyte); PUR (Purification or recovery); ANST (Analytical study); PREP (Preparation)
(extraction by thiacalix[4]arene di- and tetracarboxylic acids)
RN 14701-22-5 HCAPLUS
CN Nickel, ion (Ni2+) (8CI, 9CI) (CA INDEX NAME)

Ni^{2+}

RN 15158-11-9 HCAPLUS
CN Copper, ion (Cu2+) (8CI, 9CI) (CA INDEX NAME)

Cu^{2+}

RN 20074-52-6 HCAPLUS
CN Iron, ion (Fe3+) (8CI, 9CI) (CA INDEX NAME)

Fe^{3+}

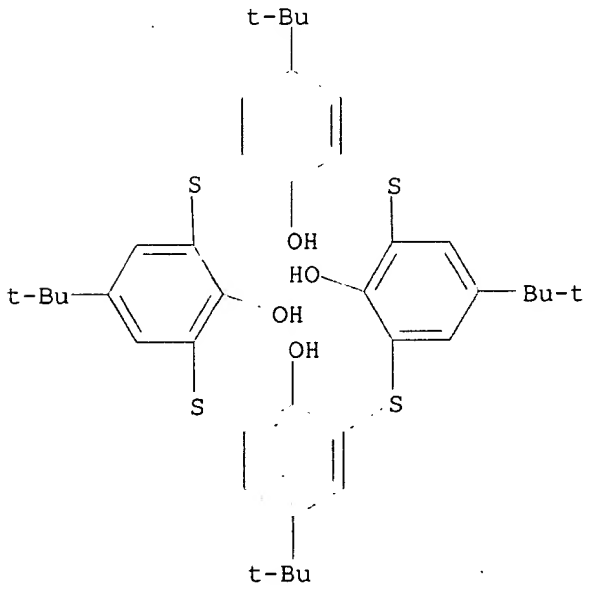
RN 22541-53-3 HCAPLUS
CN Cobalt, ion (Co2+) (8CI, 9CI) (CA INDEX NAME)

Co^{2+}

RN 23713-49-7 HCAPLUS
CN Zinc, ion (Zn2+) (8CI, 9CI) (CA INDEX NAME)

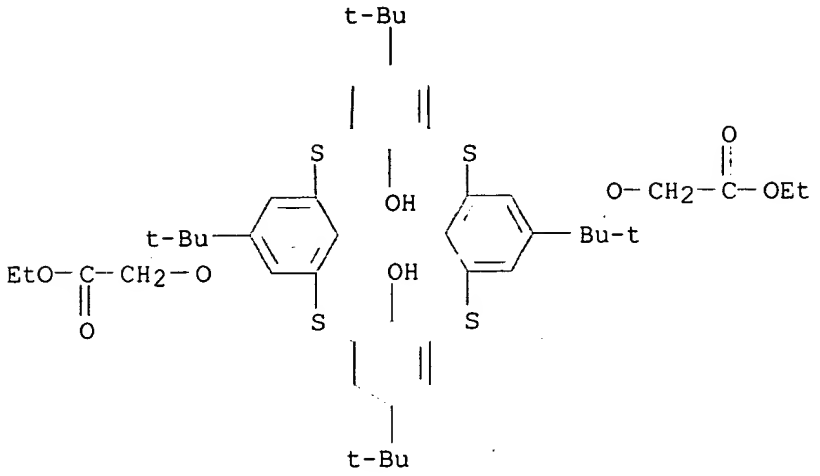
Zn^{2+}

IT **182496-55-5**
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(extraction of transition **metal** ions by)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

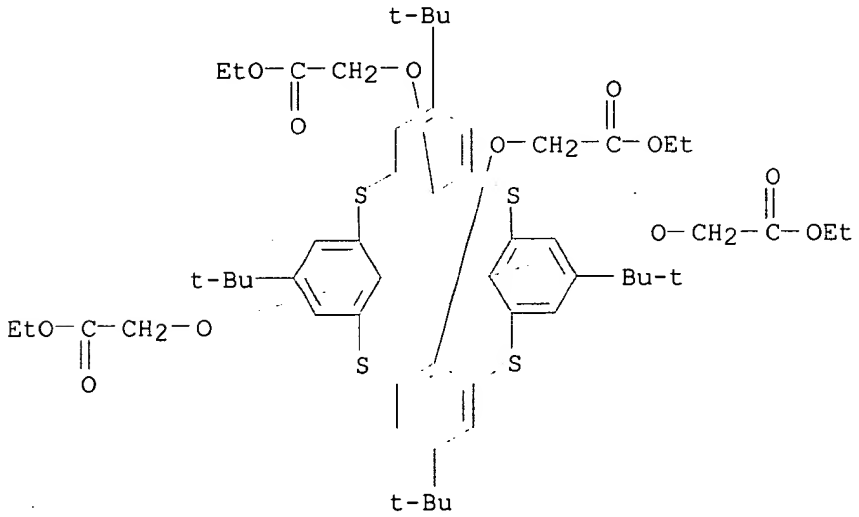


IT **252253-24-0 252287-26-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrolysis of)
RN 252253-24-0 HCAPLUS
CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl),26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-

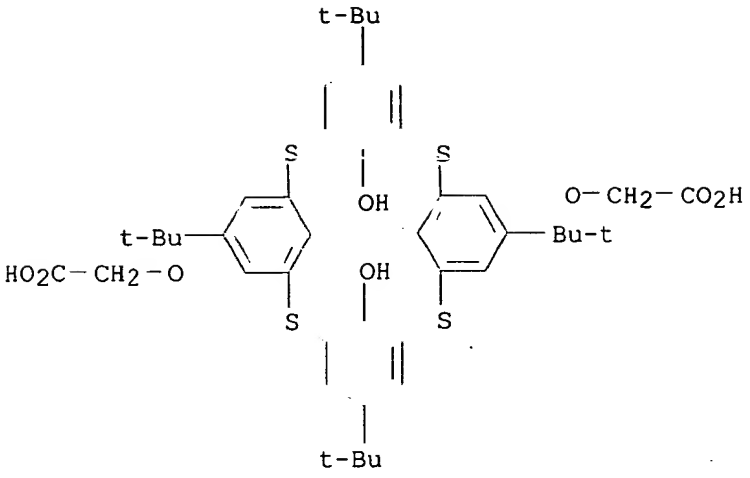
1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis-, diethyl ester (9CI) (CA INDEX NAME)



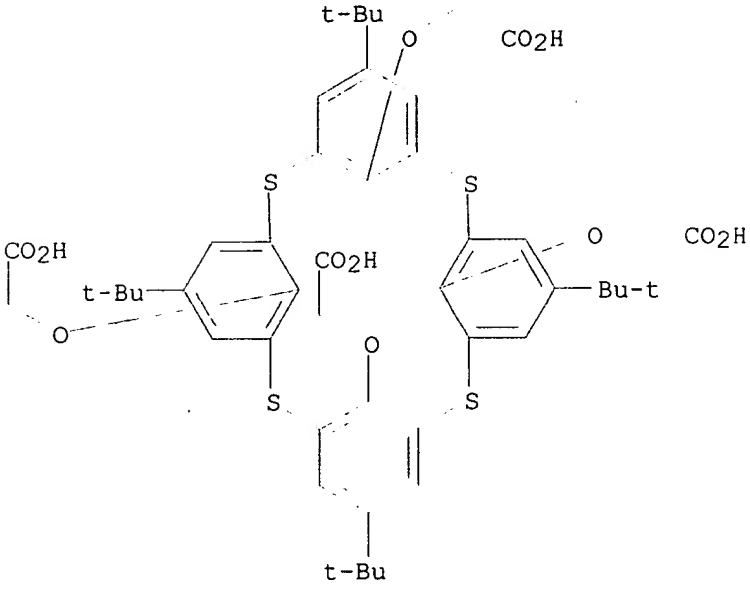
RN 252287-26-6 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester (9CI) (CA INDEX NAME)



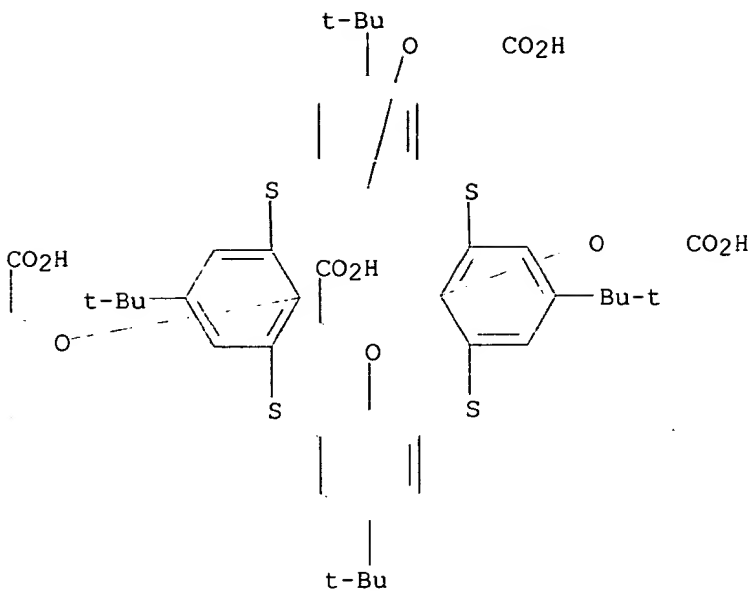
IT **209472-17-3P 252287-27-7P 252287-36-8P**
RL: ARG (Analytical reagent use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(preparation and extraction of transition **metal** ions by)
RN 209472-17-3 HCAPLUS
CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



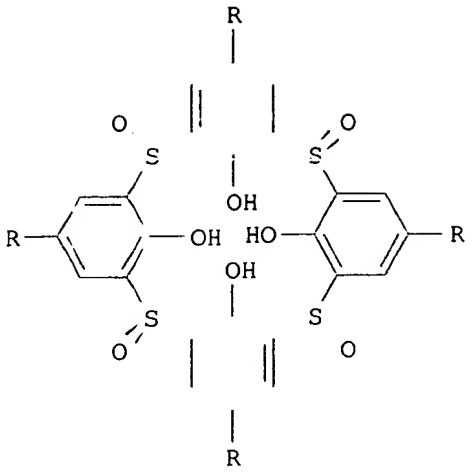
RN 252287-27-7 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, stereoisomer (9CI) (CA INDEX NAME)



RN 252287-36-8 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, stereoisomer (9CI) (CA INDEX NAME)



L58 ANSWER 10 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1999:83382 HCAPLUS
DN 130:223254
ED Entered STN: 09 Feb 1999
TI Tetrasulfinylcalix[4]arenes: synthesis and solid state structural analysis
AU Mislin, Gilles; Graf, Ernest; Hosseini, Mir Wais; De Cian, Andre; Fischer, Jean
CS Laboratoire de Chimie de Coordination Organique, associe au CNRS, Universite Louis Pasteur, Institut Le Bel, Strasbourg, F-67000, Fr.
SO Tetrahedron Letters (1999), 40(6), 1129-1132
CODEN: TELEAY; ISSN: 0040-4039
PB Elsevier Science Ltd.
DT Journal
LA English
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 75
OS CASREACT 130:223254
GI



I

AB The synthesis of two tetrasulfinylcalix[4]arene sulfoxides I (R = H, Me3C) was achieved by partial oxidation of tetrathiacalix[4]arene precursors. E.g., I (R = H) was prepared in 28% yield by oxidation of tetrathiatetrahydroxycalix[4]arene with **H2O2** in glacial acetic acid. X-ray crystallog. of I (R = H, Me3C) indicated that I was prepared as a single stereoisomer and was found preferentially in the 1,3-alternate conformer. I (R = H) forms a 3-D network based on stacking interactions between aromatic groups of neighboring calixarenes in the crystal.

ST sulfinylcalixarene crystal structure prepn; stereoselective partial oxidn thiacalixarene; solid state structure analysis sulfinylcalixarene stereoisomer conformer; network stacking interaction sulfinylcalixarene crystal

IT Crystal structure
(of tetrasulfinylcalixarenes)

IT Stereochemistry
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

IT Metacyclophanes
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

IT **221098-83-5**
RL: PRP (Properties)
(crystal structure of a tetrasulfinylcalixarene)

IT **221098-82-4P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

IT **182496-55-5 182496-69-1**
RL: RCT (Reactant); RACT (Reactant or reagent)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

IT **221098-81-3P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

RE.CNT 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Akdas, H; Tetrahedron Lett 1998, V39, P2311 HCAPLUS
(2) Bohmer, V; Angew Chem Int Ed Engl 1995, V34, P713
(3) Delaigue, X; J Chem Soc Chem Commun 1994, P1579 HCAPLUS

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(10) Kumagai, H; Tetrahedron Lett 1997, V38, P3971 HCAPLUS
(11) Mislin, G; J Chem Soc Chem Commun 1998, P1345 HCAPLUS
(12) Sone, T; Tetrahedron Lett 1997, V38, P10689

IT **221098-83-5**
RL: PRP (Properties)
(crystal structure of a tetrasulfinylcalixarene)

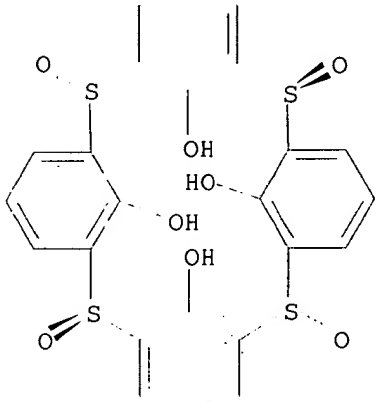
RN 221098-83-5 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 2,8,14,20-tetraoxide, stereoisomer, compd. with dichloromethane (1:1) (9CI) (CA INDEX NAME)

CM 1

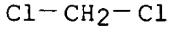
CRN 221098-81-3
CMF C24 H16 O8 S4

Relative stereochemistry.



CM 2

CRN 75-09-2
CMF C H2 Cl2

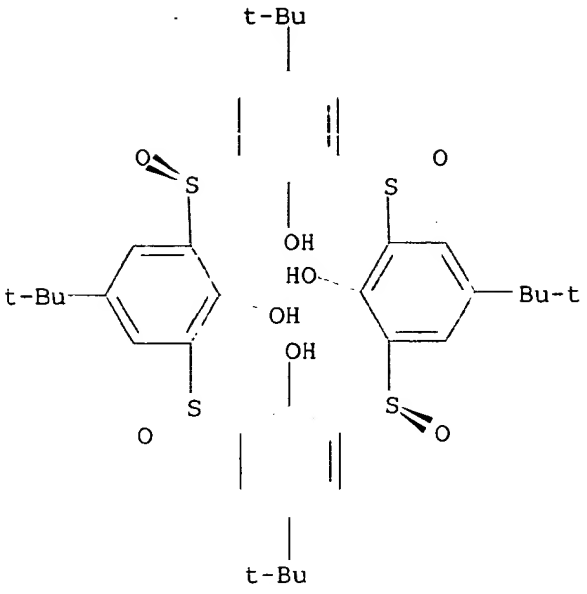


IT **221098-82-4P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)

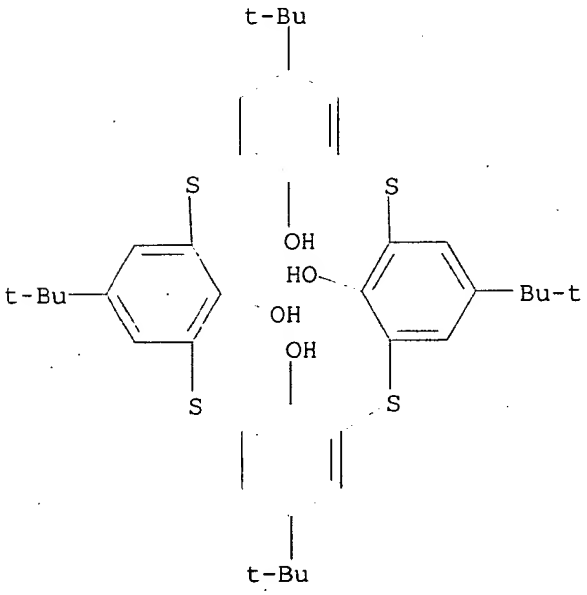
RN 221098-82-4 HCAPLUS

CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide, stereoisomer (9CI) (CA INDEX NAME)

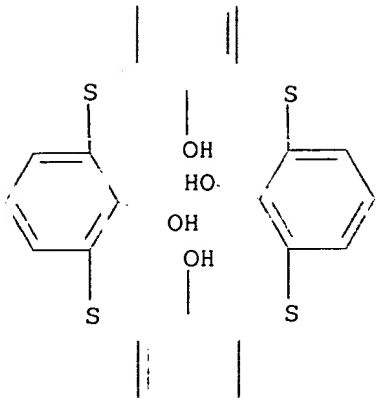
Relative stereochemistry.



IT **182496-55-5 182496-69-1**
RL: RCT (Reactant); RACT (Reactant or reagent)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

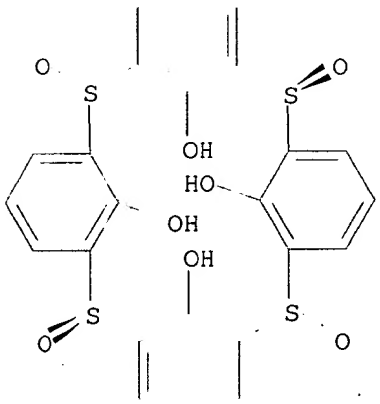


RN 182496-69-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol (9CI) (CA INDEX NAME)



IT **221098-81-3P**
RL: SPN (Synthetic preparation); PREP (Preparation)
(stereoselective preparation and crystal structures of tetrasulfinylcalixarenes)
RN 221098-81-3 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 2,8,14,20-tetraoxide, stereoisomer (9CI) (CA INDEX NAME)

Relative stereochemistry.



L58 ANSWER 11 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:755348 HCAPLUS
DN 130:182438
ED Entered STN: 02 Dec 1998
TI Selective synthesis of three conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions
AU Iki, Nobuhiko; Narumi, Fumitaka; Fujimoto, Toyohisa; Morohashi, Naoya; Miyano, Sotaro
CS Graduate School of Engineering, Department of Biomolecular Engineering, Tohoku University, Aoba-ku, Sendai, 980-8579, Japan
SO Journal of the Chemical Society, Perkin Transactions 2: Physical Organic Chemistry **(1998)**, (12), 2745-2750
CODEN: JCPKBH; ISSN: 0300-9580

PB Royal Society of Chemistry
DT Journal
LA English
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 22, 75
AB 5,11,17,23-Tetra-tert-butyl-2,8,14,20-tetrathiacalix[4]arene-25,26,27,28-tetrol (TCA) underwent facile tetra-O-alkylation by treatment with Et bromoacetate in the presence of an alkali carbonate as base catalyst in DMF or acetone to provide a mixture of conformational isomers (cone, partial cone, and 1,3-alternate) of 5,11,17,23-tetra-tert-butyl-25,26,27,28-tetrakis[(ethoxycarbonyl)methoxy]-2,8,14,20-tetrathiacalix[4]arene (I), the stereochem. of which were unambiguously assigned by 1H NMR and X-ray anal. The isomer distribution depended significantly on the base used, thus providing a facile route for the preparation of a particular conformer; Na2CO3, K2CO3, and Cs2CO3 gave cone- (77% yield), partial-cone- (58% yield), and 1,3-alternate-I (78% yield) in acetone, resp. Cone- and partial-cone-I, in turn, showed preference for Na+ and K+, resp., in an ion-pair extraction study, while 1,3-alternate-I preferred most Rb+ ion, followed by K+ and then Cs+. These results imply that the size of the cavities provided by the (ethoxycarbonyl)methoxy groups arranged on the periphery of the thiacalix[4]arene skeleton is in the order cone- < partial-cone- < 1,3-alternate-I. The ion selectivity of cone-I was rather better than that of the methylene-bridged counterpart, 5,11,17,23-tetra-tert-butyl-25,26,27,28-tetrakis[(ethoxycarbonyl)methoxy]calix[4]arene. The stoichiometry of the **complex** of cone-I with Na+ ion was determined to be 1:1 with the stability constant of 102.85 mol-1 dm3
in 50 (volume/volume)% CDCl3-CD3OD.
ST ethoxycarbonylmethoxy thiacalixarene prepn conformation conformer; crystal mol structure ethoxycarbonylmethoxy thiacalixarene prepn
IT Crystal structure
Molecular structure
(preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)
IT **Complexation**
Conformation
Conformers
(preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions)
IT **17341-24-1**, reactions **17341-25-2**, Sodium ion, reactions **18459-37-5**, Cesium ion, reactions **22537-38-8**, Rubidium ion, reactions **24203-36-9**, Potassium ion, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)
IT **210706-03-9P 210780-04-4P 210780-05-5P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions)
IT 105-36-2, Ethyl bromoacetate **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions)
RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(7) Arnaud-Neu, F; J Chem Soc Perkin Trans 2 1997, P575 HCAPLUS
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(9) Beurskens, P; The DIRDIF program system Technical Report of the Crystallographic Laboratory 1992
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(11) Billah, M; Fresenius J Anal Chem 1993, V347, P107 HCAPLUS
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(15) Creagh, D; International Tables for Crystallography, Table 4.2.6.8 1992, VC, P219
(16) Cromer, D; International Tables for X-ray Crystallography, Table 2.2 A 1974, V4
(17) Diamond, D; Chem Soc Rev 1996, P15 HCAPLUS
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(32) Ogata, M; J Am Chem Soc 1994, V116, P4505 HCAPLUS
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(37) Verboom, W; J Org Chem 1992, V57, P5394 HCAPLUS
(38) Yamamoto, Y; Bunseki Kagaku 1972, V21, P418 HCAPLUS

IT **17341-24-1**, reactions **17341-25-2**, Sodium ion, reactions **18459-37-5**, Cesium ion, reactions **22537-38-8**, Rubidium ion, reactions **24203-36-9**, Potassium ion, reactions
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(preparation and properties of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene)

RN 17341-24-1 HCAPLUS
CN Lithium, ion (Li1+) (8CI, 9CI) (CA INDEX NAME)

Li^+

RN 17341-25-2 HCAPLUS
CN Sodium, ion (Na1+) (8CI, 9CI) (CA INDEX NAME)

Na^+

RN 18459-37-5 HCAPLUS
CN Cesium, ion (Cs1+) (8CI, 9CI) (CA INDEX NAME)

Cs^+

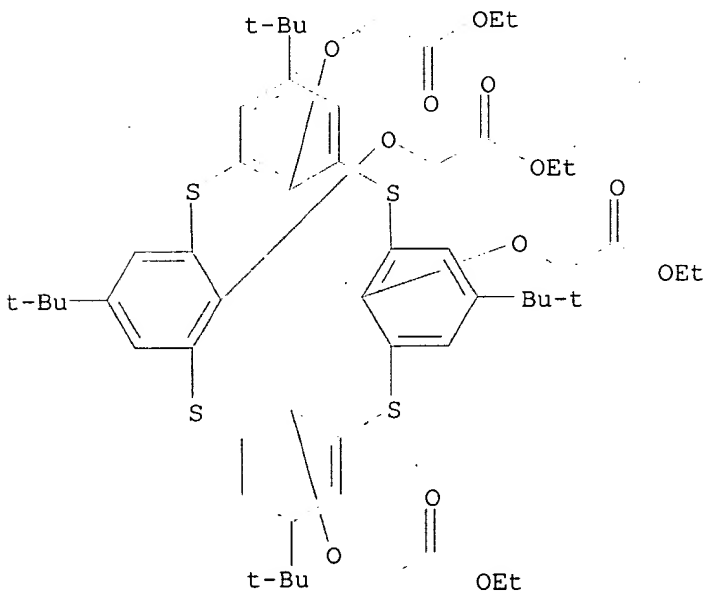
RN 22537-38-8 HCAPLUS
CN Rubidium, ion (Rb1+) (8CI, 9CI) (CA INDEX NAME)

Rb^+

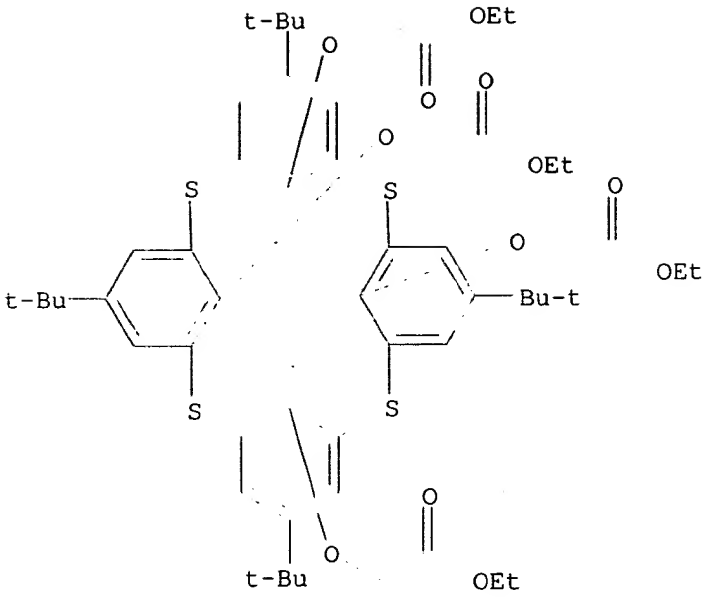
RN 24203-36-9 HCAPLUS
CN Potassium, ion (K1+) (8CI, 9CI) (CA INDEX NAME)

K^+

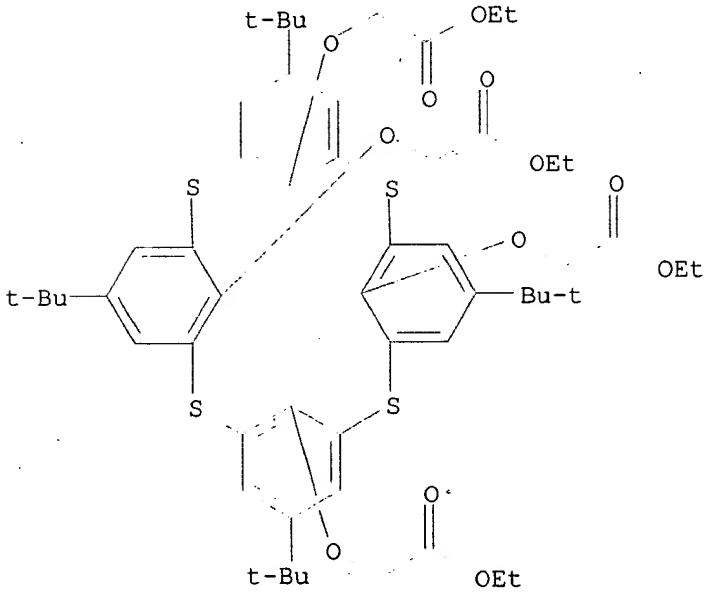
IT **210706-03-9P 210780-04-4P 210780-05-5P**
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions)
RN 210706-03-9 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA INDEX NAME)



RN 210780-04-4 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA INDEX NAME)

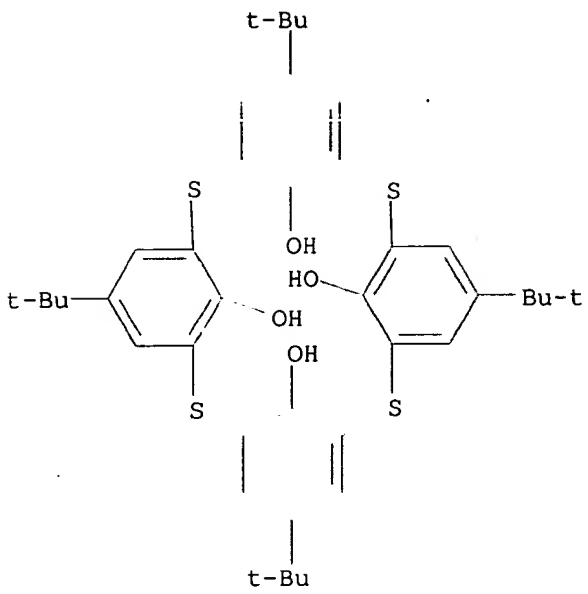


RN 210780-05-5 HCAPLUS
CN Acetic acid, 2,2',2'',2'''-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrayl]tetrakis(oxy)]tetrakis-, tetraethyl ester, stereoisomer (9CI) (CA INDEX NAME)



IT **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of conformational isomers of tetrakis[(ethoxycarbonyl)methoxy]thiacalix[4]arene and their **complexation** properties towards alkali **metal** ions)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 12 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:732864 HCAPLUS
DN 130:60263
ED Entered STN: 19 Nov 1998
TI **Metal** sensor of water soluble dansyl-modified thiacalix[4]arenes
AU Narita, Miyuki; Higuchi, Yutaka; Hamada, Fumio; Kumagai, Hitoshi
CS Department of Materials-process Engineering and Applied Chemistry for Environments, Faculty of Engineering and Resource Science, Akita University, Akita, 010-0852, Japan
SO Tetrahedron Letters (**1998**), 39(47), 8687-8690
CODEN: TELEAY; ISSN: 0040-4039
PB Elsevier Science Ltd.
DT Journal
LA English
CC 79-3 (Inorganic Analytical Chemistry)
Section cross-reference(s): 28, 76
AB The water soluble thiacalix[4]arene derivs., which are modified with di- and tri-dansyl moieties, were prepared to study their **metal** sensing abilities in aqueous solution It is the 1st example that water soluble thiacalix[4]arene derivs. can detect **metal** cations directly in aqueous solution by variation of fluorescence intensity upon addition of a **metal** cation.
ST **metal** detn fluorometry water soluble dansyl thiacalixarene
IT Fluorometry
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)
IT **Metals**, analysis
RL: ANT (Analyte); ANST (Analytical study)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)
IT Metacyclophanes
RL: ARG (Analytical reagent use); ANST (Analytical study); USES (Uses)
(thiacalixarene; **metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)
IT 7429-90-5, Aluminum, analysis **7440-43-9**, Cadmium, analysis **7440-47-3**, Chromium, analysis **7440-50-8**, Copper,

analysis **7440-66-6**, Zinc, analysis
RL: ANT (Analyte); ANST (Analytical study)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)

IT **217091-31-1P 217091-32-2P**
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)

IT 605-65-2, Dansyl chloride **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)

RE.CNT 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
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(2) Hamada, F; J Inclusion Phenom Mol Recognit Chem 1993, P15273
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(7) Ueno, A; Chem Lett 1990, P605 HCAPLUS
(8) Ueno, A; Photochemistry in Organized and Constrained Media 1991
(9) Vicens, J; Calixarenes:A Versatile Class of Macrocyclic Compounds 1991

IT **7440-43-9**, Cadmium, analysis **7440-47-3**, Chromium, analysis **7440-50-8**, Copper, analysis **7440-66-6**, Zinc, analysis
RL: ANT (Analyte); ANST (Analytical study)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)

RN 7440-43-9 HCAPLUS
CN Cadmium (8CI, 9CI) (CA INDEX NAME)

Cd

RN 7440-47-3 HCAPLUS
CN Chromium (8CI, 9CI) (CA INDEX NAME)

Cr

RN 7440-50-8 HCAPLUS
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

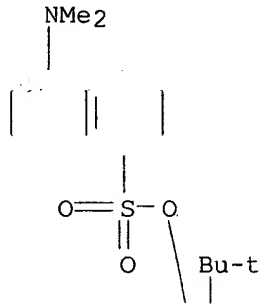
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

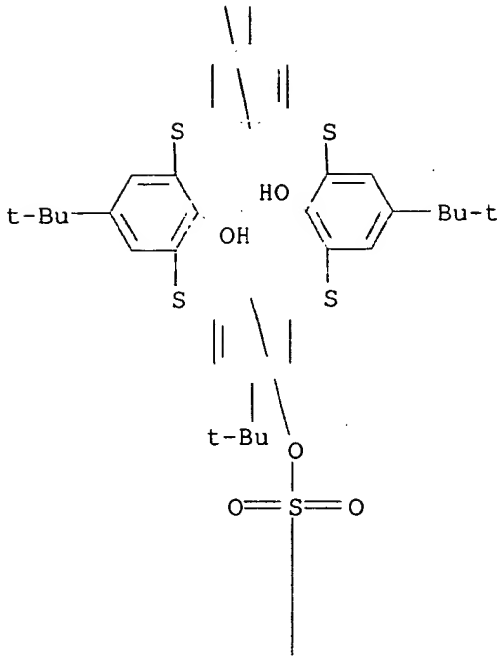
IT **217091-31-1P 217091-32-2P**
RL: ARG (Analytical reagent use); PRP (Properties); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(**metal** determination by fluorometry using water soluble dansyl-modified

thiacalix[4]arenes)
RN 217091-31-1 HCAPLUS
CN 1-Naphthalenesulfonic acid, 5-(dimethylamino)-, 5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl ester (9CI) (CA INDEX NAME)

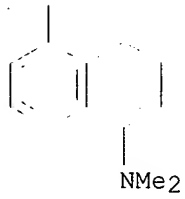
PAGE 1-A



PAGE 2-A

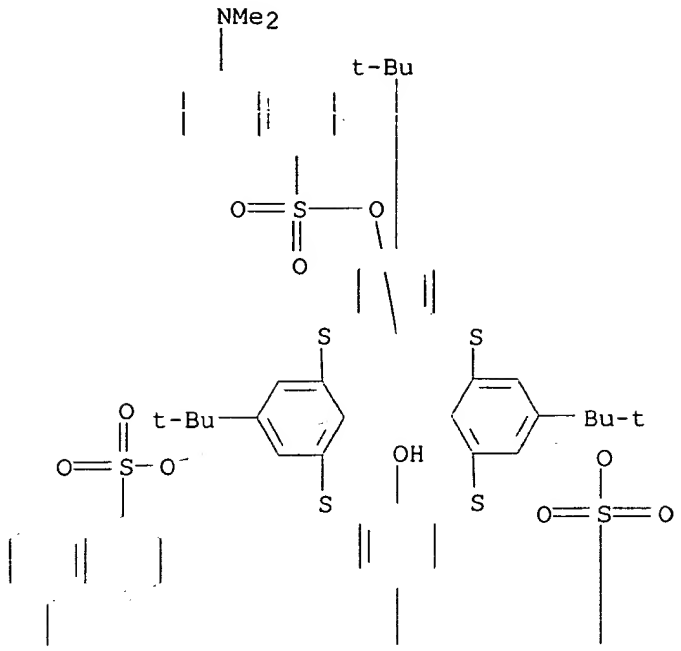


PAGE 3-A

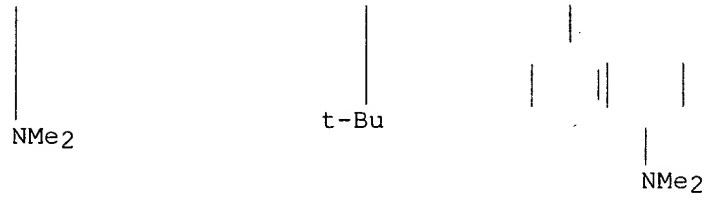


RN 217091-32-2 HCAPLUS
CN 1-Naphthalenesulfonic acid, 5-(dimethylamino)-, 5,11,17,23-tetrakis(1,1-dimethylethyl)-28-hydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27-triyl ester (9CI) (CA INDEX NAME)

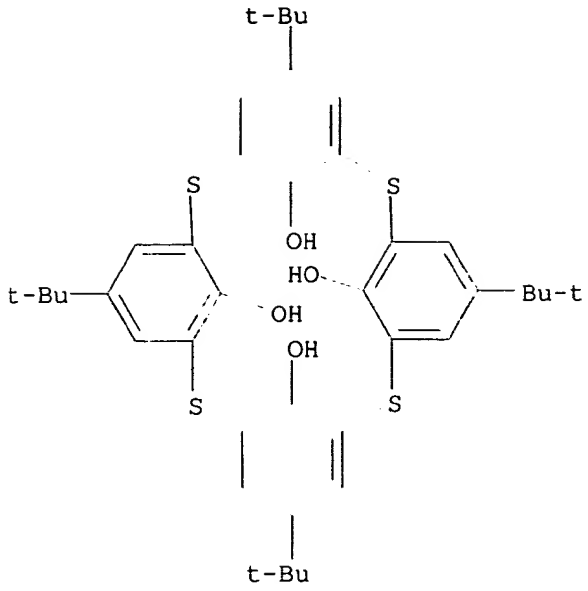
PAGE 1-A



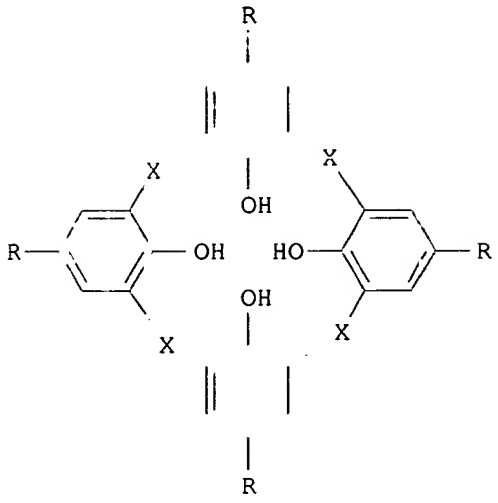
PAGE 2-A



IT **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(**metal** determination by fluorometry using water soluble dansyl-modified thiacalix[4]arenes)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 13 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:632377 HCAPLUS
DN 129:343477
ED Entered STN: 08 Oct 1998
TI Selective oxidation of thiacalix[4]arenes to the sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions
AU Iki, Nobuhiko; Kumagai, Hitoshi; Morohashi, Naoya; Ejima, Kohki; Hasegawa, Mitsuharu; Miyanari, Setsuko; Miyano, Sotaro
CS Department Biomolecular Engineering, Graduate School Engineering, Tohoku University, Sendai, 980-5879, Japan
SO Tetrahedron Letters (**1998**), 39(41), 7559-7562
CODEN: TELEAY; ISSN: 0040-4039
PB Elsevier Science Ltd.
DT Journal
LA English
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))
Section cross-reference(s): 78, 79
GI



I

AB Thiacalix[4]arenes [I; X = S; R = tert-Bu, tert-octyl (1,1,3,3-tetramethylbutyl)], in which the four methylene bridges of calix[4]arenes are replaced by sulfide linkages, were selectively oxidized to sulfinyl- or sulfonylcalix[4]arene I (X = SO, SO2; R = same as above) under mild conditions with control of the stoichiometry of the oxidant. Solvent extraction of the transition and alkaline earth **metal** ions with these hosts showed that the **metal** binding ability was governed by the oxidation state of the sulfur functionalities.

ST thiacalixarene selective oxidn sulfinylcalixarene sulfonylcalixarene; alk earth **metal** ion **complexation**; transition **metal** ion **complexation**

IT Alkaline earth **metals**
Transition **metals**, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(ions, solvent extraction; selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT **Complexation**
Complexing agents
Solvent extraction
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT Metacyclophanes
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT Oxidation
(selective; selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT **14127-61-8**, Calcium(II) ion, properties **14701-22-5**, Nickel(II) ion, properties **15158-11-9**, Copper(II) ion, properties **22537-22-0**, Magnesium(II) ion, properties **22541-12-4**, Barium(II) ion, properties **22541-53-3**, Cobalt(II) ion, properties **23713-49-7**, Zinc(II) ion, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT **182496-55-5P**
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT 60705-62-6P **182496-64-6P 204190-47-6P**
204190-49-8P 215511-22-1P
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

IT **14127-61-8DP**, Calcium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
14701-22-5DP, Nickel(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
15158-11-9DP, Copper(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22537-22-0DP, Magnesium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-12-4DP, Barium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-53-3DP, Cobalt(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
23713-49-7DP, Zinc(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
182496-55-5DP, transition **metal complexes**
182496-64-6DP, transition **metal complexes**
204190-47-6DP, transition and alkaline earth **metal complexes** **215511-22-1DP**, earth **metal complexes**
RL: SPN (Synthetic preparation); PREP (Preparation)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

RE.CNT 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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(6) Iki, N; To be published elsewhere
(7) Konig, B; Angew Chem Int Ed Engl 1995, V34, P661
(8) Kumagai, H; Tetrahedron Lett 1997, V38, P3971 HCAPLUS
(9) Nagasaki, T; Bull Chem Soc Jpn 1992, V65, P471 HCAPLUS
(10) Pearson, R; J Am Chem Soc 1963, V85, P3533 HCAPLUS
(11) Pearson, R; J Chem Edu 1968, V45, P581 HCAPLUS
(12) Sone, T; Tetrahedron 1997, V53, P10689 HCAPLUS
(13) Vicens, J; Calixarenes:A Versatile Class of Macrocyclic Compounds 1991

IT **14127-61-8**, Calcium(II) ion, properties **14701-22-5**, Nickel(II) ion, properties **15158-11-9**, Copper(II) ion, properties **22537-22-0**, Magnesium(II) ion, properties **22541-12-4**, Barium(II) ion, properties **22541-53-3**, Cobalt(II) ion, properties **23713-49-7**, Zinc(II) ion, properties
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process);

PRP (Properties); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
RN 14127-61-8 HCAPLUS
CN Calcium, ion (Ca2+) (8CI, 9CI) (CA INDEX NAME)

Ca^{2+}

RN 14701-22-5 HCAPLUS
CN Nickel, ion (Ni2+) (8CI, 9CI) (CA INDEX NAME)

Ni^{2+}

RN 15158-11-9 HCAPLUS
CN Copper, ion (Cu2+) (8CI, 9CI) (CA INDEX NAME)

Cu^{2+}

RN 22537-22-0 HCAPLUS
CN Magnesium, ion (Mg2+) (8CI, 9CI) (CA INDEX NAME)

Mg^{2+}

RN 22541-12-4 HCAPLUS
CN Barium, ion (Ba2+) (8CI, 9CI) (CA INDEX NAME)

Ba^{2+}

RN 22541-53-3 HCAPLUS
CN Cobalt, ion (Co2+) (8CI, 9CI) (CA INDEX NAME)

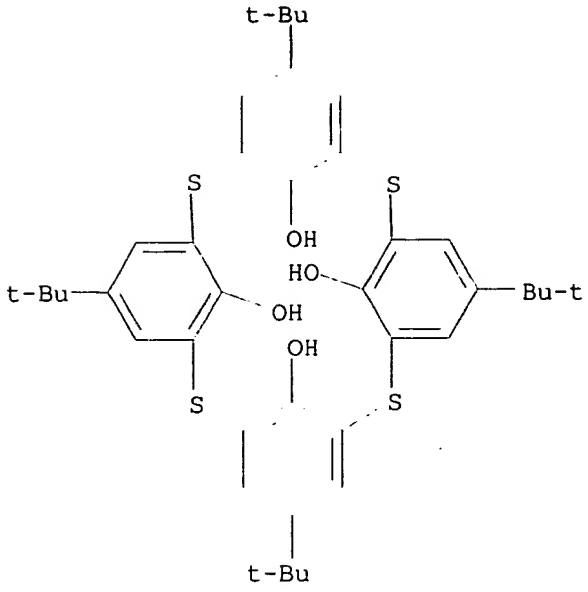
Co^{2+}

RN 23713-49-7 HCAPLUS
CN Zinc, ion (Zn2+) (8CI, 9CI) (CA INDEX NAME)

Zn^{2+}

IT **182496-55-5P**
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); PROC (Process); RACT (Reactant or reagent)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-

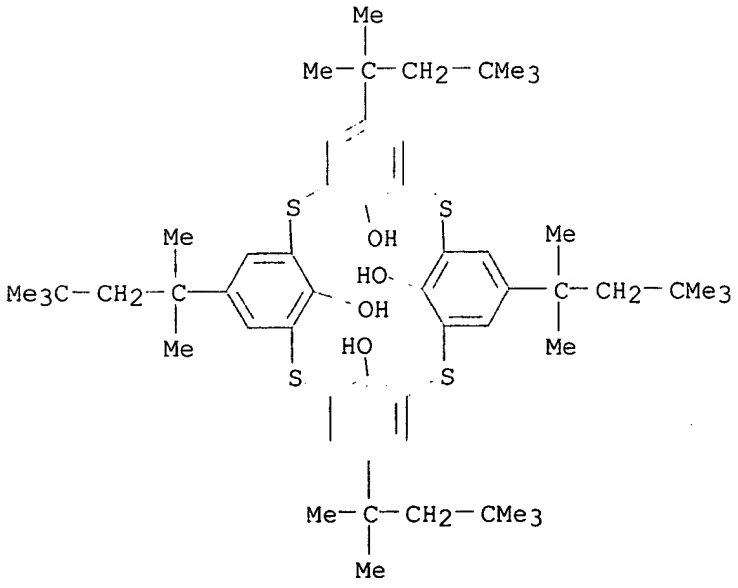
tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



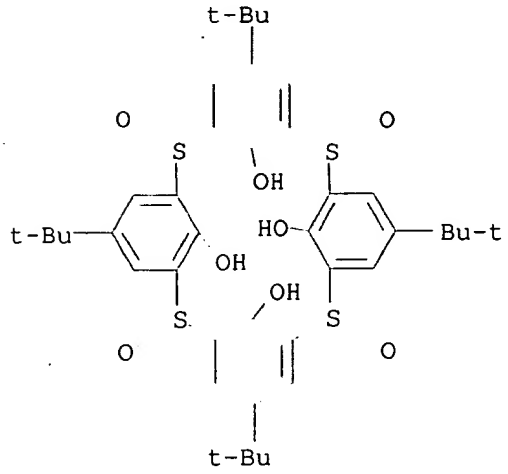
IT **182496-64-6P 204190-47-6P 204190-49-8P 215511-22-1P**
RL: MSC (Miscellaneous); PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

RN 182496-64-6 HCAPLUS

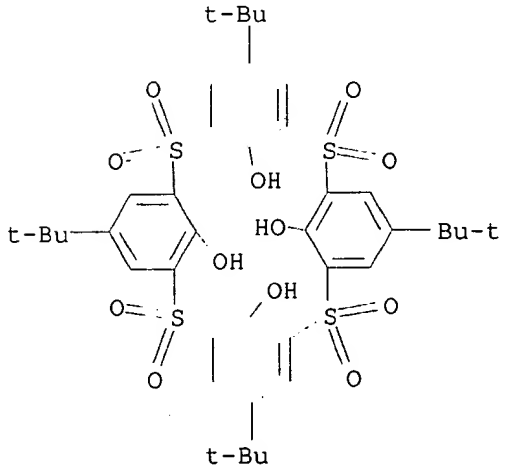
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



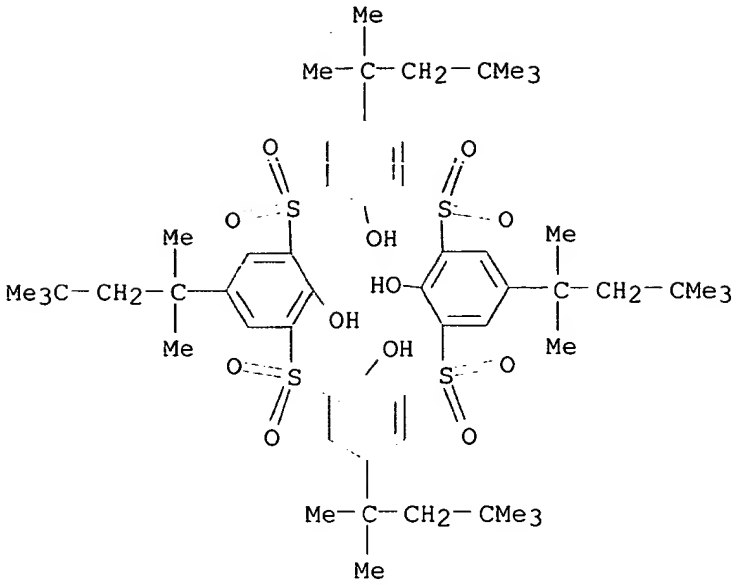
RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 204190-49-8 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



IT **14127-61-8DP**, Calcium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
14701-22-5DP, Nickel(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
15158-11-9DP, Copper(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22537-22-0DP, Magnesium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-12-4DP, Barium(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
22541-53-3DP, Cobalt(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
23713-49-7DP, Zinc(II) ion, thia-, sulfinyl- and sulfonylcalix[4]arene **complexes**, preparation
182496-55-5DP, transition **metal complexes**
182496-64-6DP, transition **metal complexes**
204190-47-6DP, transition and alkaline earth **metal complexes** **215511-22-1DP**, earth **metal complexes**
RL: SPN (Synthetic preparation); PREP (Preparation)
(selective oxidation of thiacalix[4]arenes to sulfinyl- and sulfonylcalix[4]arenes and their coordination ability to **metal** ions)

RN 14127-61-8 HCAPLUS
CN Calcium, ion (Ca2+) (8CI, 9CI) (CA INDEX NAME)

Ca^{2+}

RN 14701-22-5 HCAPLUS
CN Nickel, ion (Ni2+) (8CI, 9CI) (CA INDEX NAME)

Ni^{2+}

RN 15158-11-9 HCAPLUS
CN Copper, ion (Cu2+) (8CI, 9CI) (CA INDEX NAME)

Cu^{2+}

RN 22537-22-0 HCAPLUS
CN Magnesium, ion (Mg2+) (8CI, 9CI) (CA INDEX NAME)

Mg^{2+}

RN 22541-12-4 HCAPLUS
CN Barium, ion (Ba2+) (8CI, 9CI) (CA INDEX NAME)

Ba^{2+}

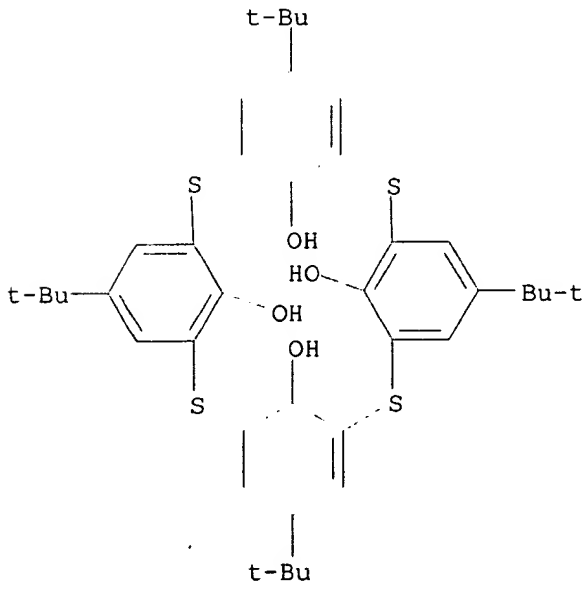
RN 22541-53-3 HCAPLUS
CN Cobalt, ion (Co2+) (8CI, 9CI) (CA INDEX NAME)

Co^{2+}

RN 23713-49-7 HCAPLUS
CN Zinc, ion (Zn2+) (8CI, 9CI) (CA INDEX NAME)

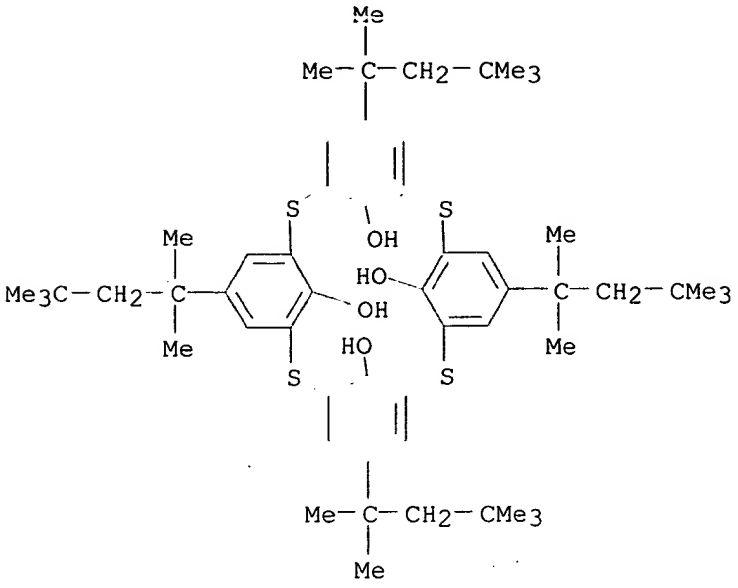
Zn^{2+}

RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

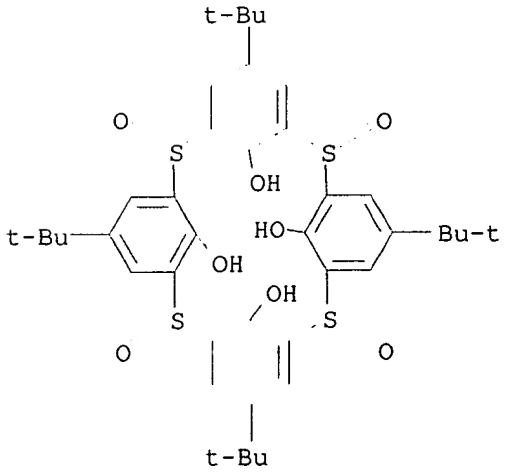


RN 182496-64-6 HCAPLUS

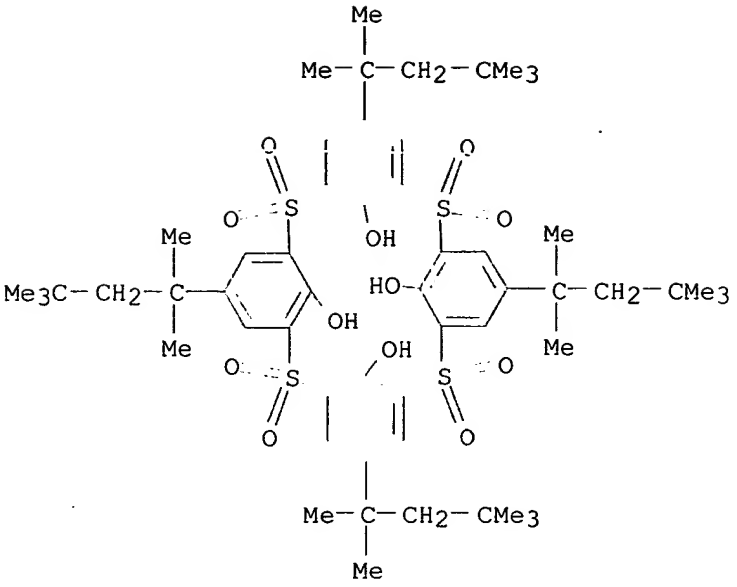
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 215511-22-1 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



L58 ANSWER 14 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:491579 HCAPLUS
DN 129:236200
ED Entered STN: 07 Aug 1998
TI High **complexation** ability of thiacalixarene with transition **metal** ions. The effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups
AU Iki, Nobuhiko; Morohashi, Naoya; Narumi, Fumitaka; Miyano, Sotaro
CS Department of Biomolecular Engineering, Graduate School of Engineering, Tohoku University, Aoba-ku, Sendai, 980-8579, Japan
SO Bulletin of the Chemical Society of Japan (**1998**), 71(7), 1597-1603
CODEN: BCSJA8; ISSN: 0009-2673
PB Chemical Society of Japan
DT Journal
LA English
CC 68-2 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
AB The ability of tetra(p-t-butyl)tetrathiacalix[4]arenetetrol (TCA, H4L), a cyclic tetramer of p-(t-butyl)phenol bridged with four epithio groups, to bind **metal** ions was investigated via a solvent extraction study. Although tetra(p-t-butyl)-calix[4]arenetetrol (CA) has very poor affinity for transition **metal** ions (M2+), TCA is an excellent extractant of these **metal** ions. The chemical formulas of the extracted TCA **metal complexes** were found by slope anal. to be neutral 1:1 **complexes** [MH2L]. The origin of the high affinity of TCA for transition **metal** ions is discussed, in which it is suggested that ligation of the epithio group is important as evidenced by an NMR study of the [ZnH2L] **complex**.
ST thiacalixarene solvent extn **complexation** transition **metal**; epithio group thiacalixarene transition **metal** extn
IT Conformation
NMR (nuclear magnetic resonance)
Solution structure
(NMR study of solution structure of zinc-thiacalixarene **complexes**)
IT **Complexation**
Extractants

Functional groups
Solvent extraction
(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

IT Transition **metals**, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

IT **7440-66-6D**, Zinc, **complexes** with tetra(p-t-butyl)tetrathiacalix[4]arenetetrol, properties **182496-55-5D**, zinc **complexes**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(NMR study of solution structure of zinc-thiacalixarene **complexes**)

IT **7439-93-2**, Lithium, processes **7439-95-4**, Magnesium, processes **7439-96-5**, Manganese, processes **7440-02-0**, Nickel, processes **7440-09-7**, Potassium, processes **7440-17-7**, Rubidium, processes **7440-23-5**, Sodium, processes **7440-46-2**, Cesium, processes **7440-48-4**, Cobalt, processes **7440-50-8**, Copper, processes **7440-66-6**, Zinc, processes **182496-55-5**
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

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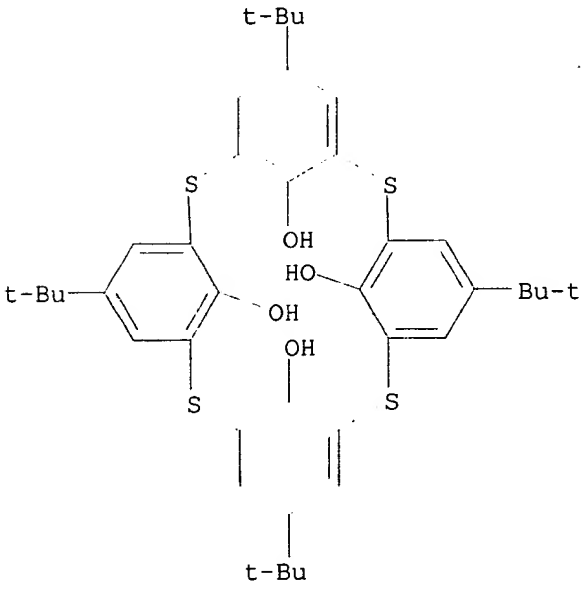
IT **7440-66-6D**, Zinc, **complexes** with tetra(p-t-butyl)tetrathiacalix[4]arenetetrol, properties **182496-55-5D**, zinc **complexes**
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(NMR study of solution structure of zinc-thiacalixarene **complexes**)

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



IT **7439-93-2**, Lithium, processes **7439-95-4**, Magnesium, processes **7439-96-5**, Manganese, processes **7440-02-0**, Nickel, processes **7440-09-7**, Potassium, processes **7440-17-7**, Rubidium, processes **7440-23-5**, Sodium, processes **7440-46-2**, Cesium, processes **7440-48-4**, Cobalt, processes **7440-50-8**, Copper, processes **7440-66-6**, Zinc, processes **182496-55-5**
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(high **complexation** ability of thiacalixarene with transition **metal** ions with regard to effects of replacing methylene bridges of tetra(p-t-butyl)calix[4]arenetetrol by epithio groups)

RN 7439-93-2 HCAPLUS

CN Lithium (7CI, 8CI, 9CI) (CA INDEX NAME)

Li

RN 7439-95-4 HCAPLUS
CN Magnesium (8CI, 9CI) (CA INDEX NAME)

Mg

RN 7439-96-5 HCAPLUS
CN Manganese (8CI, 9CI) (CA INDEX NAME)

Mn

RN 7440-02-0 HCAPLUS
CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-09-7 HCAPLUS
CN Potassium (8CI, 9CI) (CA INDEX NAME)

K

RN 7440-17-7 HCAPLUS
CN Rubidium (8CI, 9CI) (CA INDEX NAME)

Rb

RN 7440-23-5 HCAPLUS
CN Sodium (8CI, 9CI) (CA INDEX NAME)

Na

RN 7440-46-2 HCAPLUS
CN Cesium (8CI, 9CI) (CA INDEX NAME)

Cs

RN 7440-48-4 HCAPLUS
CN Cobalt (8CI, 9CI) (CA INDEX NAME)

Co

RN 7440-50-8 HCAPLUS

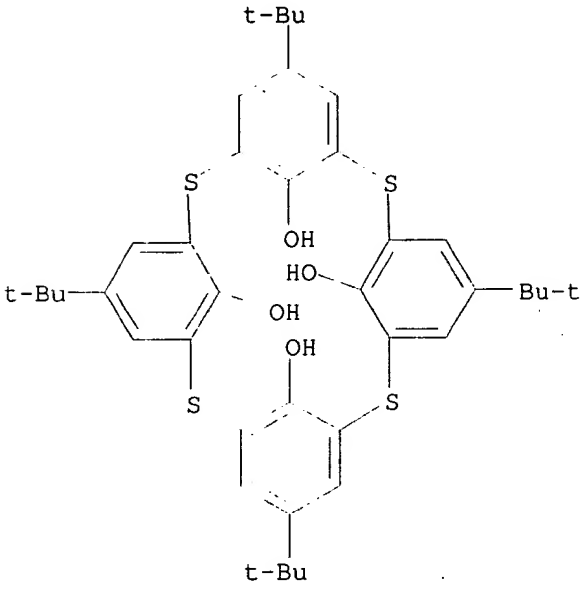
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



L58 ANSWER 15 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN 1998:466431 HCAPLUS
DN 129:98011
ED Entered STN: 28 Jul 1998
TI Cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solutions
IN Miyano, Sotaro; Iki, Mobuhiko; Narumi, Fumitaka; Morohashi, Naoya; Kumagai, Hitoshi
PA Cosmo Research Institute, Japan
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM C22B003-34
CC 54-3 (Extractive Metallurgy)
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 851035	A1	19980701	EP 1997-122862	19971223 <--
	EP 851035	B1	20020403		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO

US 5881358 A 19990309 US 1997-998426 19971224 <--
JP 11179104 A2 19990706 JP 1997-366037 19971224 <--
PRAI JP 1996-356340 A 19961226 <--
JP 1997-299594 A 19971017 <--
OS MARPAT 129:98011
GI For diagram(s), see printed CA Issue.
AB Transition **metal** ions in aqueous solution are extracted with an organic phase containing cyclic phenol sulfides (I; X = H, acyl carboxyalkyl, carbamoylalkyl; Z = thio, sulfinyl, sulfonyl; R = hydrocarbyl; n = 4-8). The extraction is increased by an accelerator for **complexing** the transition **metal** ions, and selected from pyridine, methylpyridine, ethylpyridine, quinoline, and tryptophan. The typical cyclic phenol as I (with X = H, Z = S, R = tert-Bu, n = 4) was dissolved in chloroform at 5 + 10-4M, and was contacted at 1:1 volume ratio with aqueous solution containing 1.0 + 10-4M of CoCl2 stabilized at pH of 8, resulting in the Co-ion extraction of 99%. The similar results were obtained for ZnCl2 or NiCl2, vs. only 35% for MnCl3.
ST transition **metal** extn cyclic phenol sulfide; cobalt ion extn cyclic phenol sulfide; nickel ion extn cyclic phenol sulfide; zinc ion extn cyclic phenol sulfide; thioether extn transition **metal** aq soln
IT Thioethers
Thioethers
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(cyclic, extraction with; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)
IT Actinides
Rare earth **metals**, preparation
Transition **metals**, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)
IT **Complexing** agents
(in extraction; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)
IT 54-12-6, Tryptophan 91-22-5, Quinoline, uses 110-86-1, Pyridine, uses 1333-41-1, Methylpyridine 28631-77-8, Ethylpyridine
RL: MOA (Modifier or additive use); USES (Uses)
(**complexing** with, in extraction; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)
IT **7439-91-0P**, Lanthanum, preparation **7439-94-3P**, Lutetium, preparation **7440-02-0P**, Nickel, preparation **7440-10-0P**, Praseodymium, preparation **7440-48-4P**, Cobalt, preparation **7440-50-8P**, Copper, preparation **7440-53-1P**, Europium, preparation **7440-54-2P**, Gadolinium, preparation **7440-64-4P**, Ytterbium, preparation **7440-66-6P**, Zinc, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition **metal** ions from aqueous solns.)
IT **182496-55-5 182496-61-3 182496-64-6 204190-49-8 209472-17-3**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(extraction with; cyclic phenol sulfides for solvent extraction of transition **metals** from aqueous solns.)
RE.CNT 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE
(1) Cosmo Research Institute; EP 0731102 A HCAPLUS
IT **7439-91-0P**, Lanthanum, preparation **7439-94-3P**, Lutetium, preparation **7440-02-0P**, Nickel, preparation **7440-10-0P**

, Praseodymium, preparation **7440-48-4P**, Cobalt, preparation **7440-50-8P**, Copper, preparation **7440-53-1P**, Europium, preparation **7440-54-2P**, Gadolinium, preparation **7440-64-4P**, Ytterbium, preparation **7440-66-6P**, Zinc, preparation
RL: PUR (Purification or recovery); PREP (Preparation)
(extraction of; cyclic phenol sulfides for solvent extraction of transition **metal** ions from aqueous solns.)

RN 7439-91-0 HCAPLUS
CN Lanthanum (8CI, 9CI) (CA INDEX NAME)

La

RN 7439-94-3 HCAPLUS
CN Lutetium (8CI, 9CI) (CA INDEX NAME)

Lu

RN 7440-02-0 HCAPLUS
CN Nickel (8CI, 9CI) (CA INDEX NAME)

Ni

RN 7440-10-0 HCAPLUS
CN Praseodymium (8CI, 9CI) (CA INDEX NAME)

Pr

RN 7440-48-4 HCAPLUS
CN Cobalt (8CI, 9CI) (CA INDEX NAME)

Co

RN 7440-50-8 HCAPLUS
CN Copper (7CI, 8CI, 9CI) (CA INDEX NAME)

Cu

RN 7440-53-1 HCAPLUS
CN Europium (8CI, 9CI) (CA INDEX NAME)

Eu

RN 7440-54-2 HCAPLUS
CN Gadolinium (8CI, 9CI) (CA INDEX NAME)

Gd

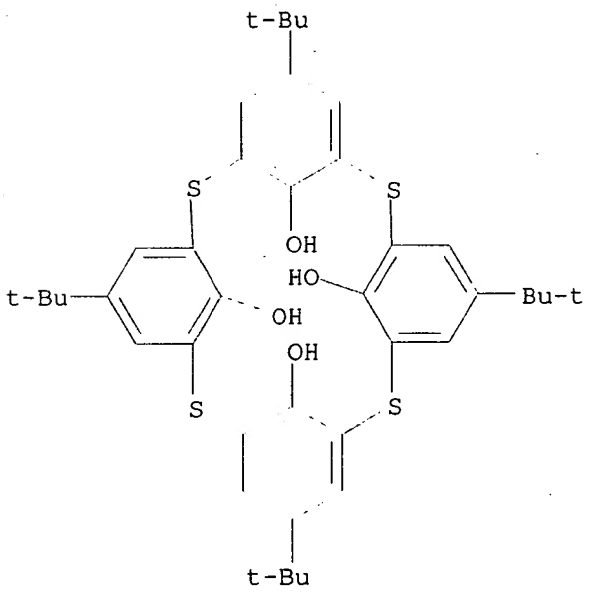
RN 7440-64-4 HCAPLUS
CN Ytterbium (8CI, 9CI) (CA INDEX NAME)

Yb

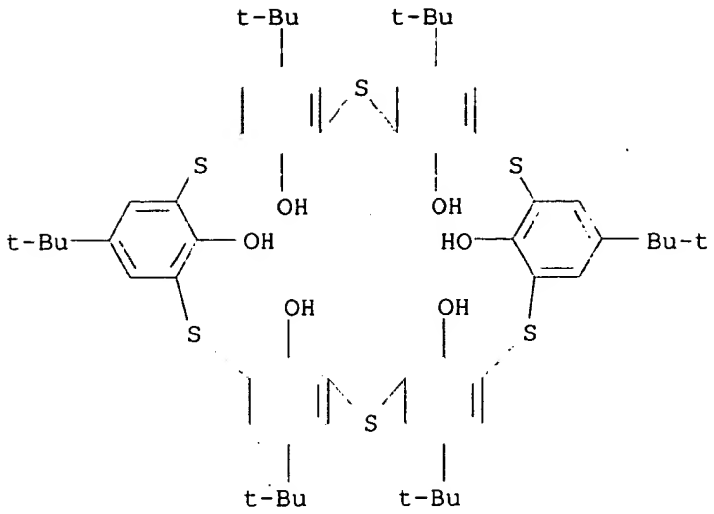
RN 7440-66-6 HCAPLUS
CN Zinc (7CI, 8CI, 9CI) (CA INDEX NAME)

Zn

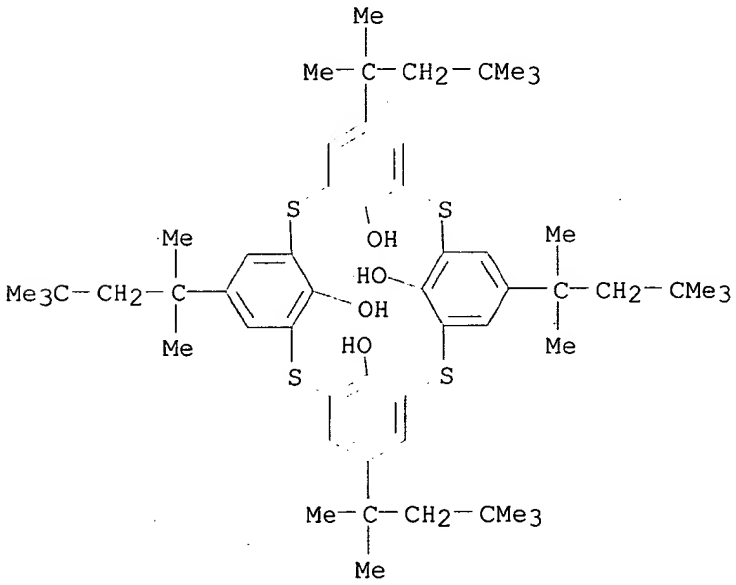
IT **182496-55-5 182496-61-3 182496-64-6**
204190-49-8 209472-17-3
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(extraction with; cyclic phenol sulfides for solvent extraction of transition
metals from aqueous solns.)
RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



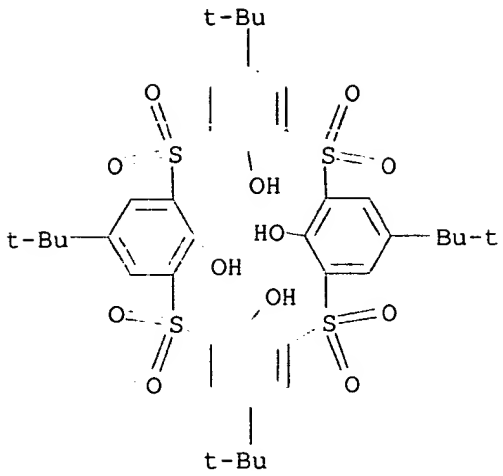
RN 182496-61-3 HCAPLUS
CN 2,8,14,20,26,32-Hexathiaheptacyclo[31.3.1.13,7.19,13.115,19.121,25.127,31]dotetraconta-1(37),3,5,7(42),9,11,13(41),15,17,19(40),21,23,25(39),27,29,31(38),33,35-octadecaene-37,38,39,40,41,42-hexol, 5,11,17,23,29,35-hexakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)



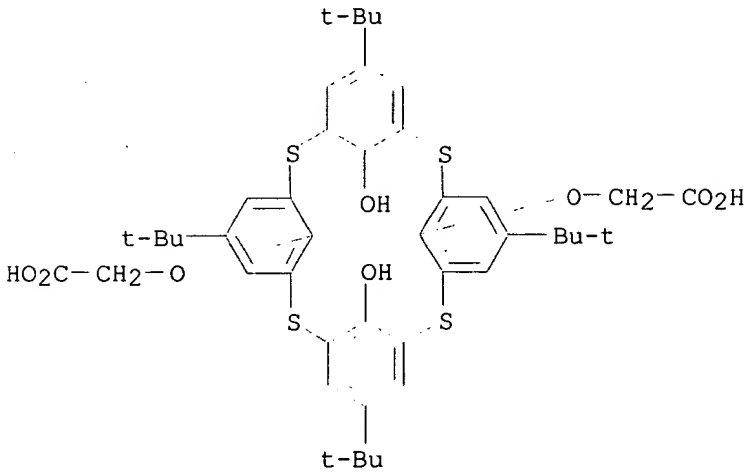
RN 182496-64-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1,3,3-tetramethylbutyl)- (9CI) (CA INDEX NAME)



RN 204190-49-8 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



RN 209472-17-3 HCAPLUS
CN Acetic acid, 2,2'-[[5,11,17,23-tetrakis(1,1-dimethylethyl)-26,28-dihydroxy-2,8,14,20-tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,27-diyl]bis(oxy)]bis- (9CI) (CA INDEX NAME)



L58 ANSWER 16 OF 16 HCAPLUS COPYRIGHT 2004 ACS on STN
AN **1998:175919** HCAPLUS
DN **128:217390**
ED Entered STN: 25 Mar 1998
TI Preparation of sulfonylcalixarene and sulfinylcalixarene derivatives as ion sensors
IN **Kumagai, Hitoshi; Miyanari, Setsuko; Miyano, Sotaro**
PA **Cosmo** Research Institute, Japan; **Cosmo** Oil Co., Ltd.; Kumagai, Hitoshi; Miyanari, Setsuko; Miyano, Sotaro
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
IC ICM C07D341-00
CC 28-23 (Heterocyclic Compounds (More Than One Hetero Atom))

Section cross-reference(s): 79

FAN.CNT 1

	PATENT NO.	KIND	DATE		APPLICATION NO.	DATE	
PI	WO 9809959	A1	19980312		WO 1997-JP2789	19970808	<--
	W: JP, US						
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE						
	EP 882724	A1	19981209		EP 1997-934752	19970808	<--
	EP 882724	B1	20011107				
	R: DE, FR, GB, NL						
	US 5998631	A	19991207		US 1998-68583	19980506	<--
PRAI	JP 1996-255368	A	19960906	<--			
	WO 1997-JP2789	W	19970808	<--			
OS	MARPAT 128:217390						

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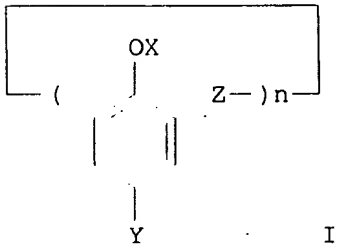


I

AB The title compds. I [X represents a hydrogen atom, a hydrocarbon group, or an acyl group; Y represents a hydrogen atom, a hydrocarbon group, a halogenated hydrocarbon group, etc.; Z represents a group selected from the group consisting of S, a sulfinyl group, and a sulfonyl group; and n is an integer of 4 to 12, provided that a plurality of Xs or Ys may be the same or different and at least one Z of a plurality of Zs represents a sulfinyl or sulfonyl group] are prepared Sodium ions in water were extracted into chloroform by the use of I [X = H; Y = tert-butyl; n = 4; Z = sulfonyl].

ST sulfonylcalixarene sulfinylcalixarene prepn ion sensor

IT Sensors
(ion; preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT Metacyclophanes
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT **17341-25-2**, Sodium ion, miscellaneous
RL: MSC (Miscellaneous)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT 98-54-4, 4-tert-Butylphenol 7697-37-2, Nitric acid, reactions 7704-34-9, Sulfur, reactions **7722-84-1**, **Hydrogen peroxide**, reactions 7726-95-6, Bromine, reactions 7782-44-7, Oxygen, reactions 10028-15-6, Ozone, reactions **182496-55-5**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT **182496-68-0P 204190-45-4P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)

(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

IT **204190-47-6P 204190-49-8P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RE.CNT 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

(1) Cosmo Research Institute; EP 731102 A1 1996 HCAPLUS
(2) Kumagai, H; Tetrahedron Letters 1997, V38(22), P3971 HCAPLUS
(3) Sone, T; Tetrahedron 1997, V38(22), P10689

IT **17341-25-2**, Sodium ion, miscellaneous
RL: MSC (Miscellaneous)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RN 17341-25-2 HCAPLUS
CN Sodium, ion (Na1+) (8CI, 9CI) (CA INDEX NAME)

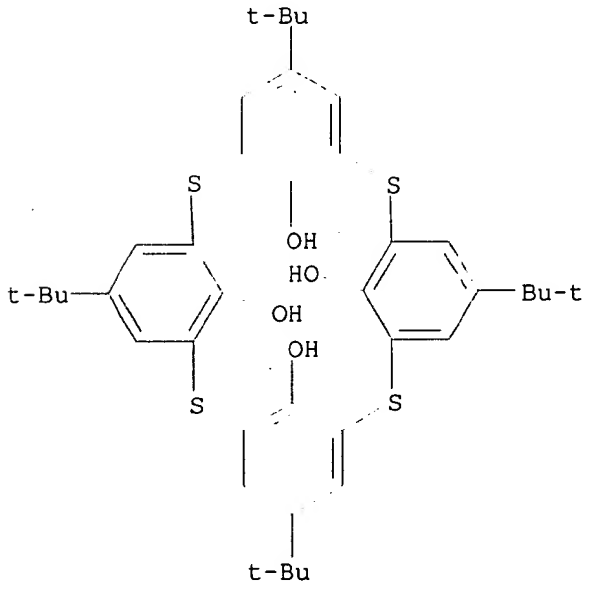
Na^+

IT **7722-84-1, Hydrogen peroxide**, reactions
182496-55-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RN 7722-84-1 HCAPLUS
CN Hydrogen peroxide (H2O2) (9CI) (CA INDEX NAME)

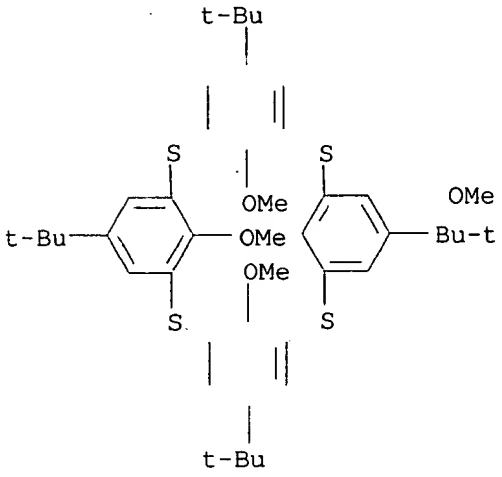
HO—OH

RN 182496-55-5 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)- (9CI) (CA INDEX NAME)

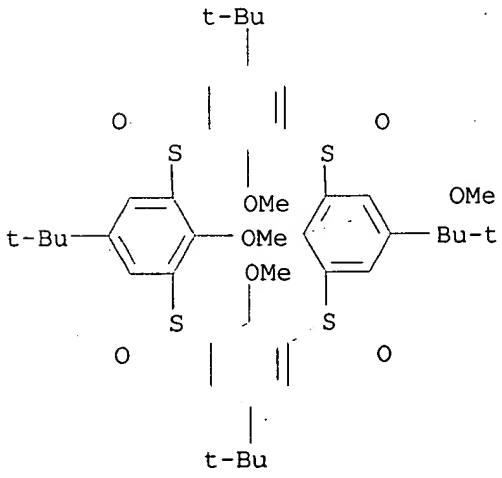


IT **182496-68-0P 204190-45-4P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RN 182496-68-0 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23-tetrakis(1,1-dimethylethyl)-25,26,27,28-tetramethoxy- (9CI) (CA INDEX NAME)

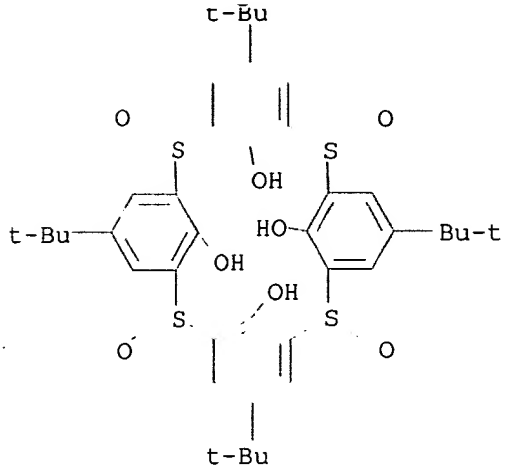


RN 204190-45-4 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene, 5,11,17,23-tetrakis(1,1-dimethylethyl)-25,26,27,28-tetramethoxy-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)

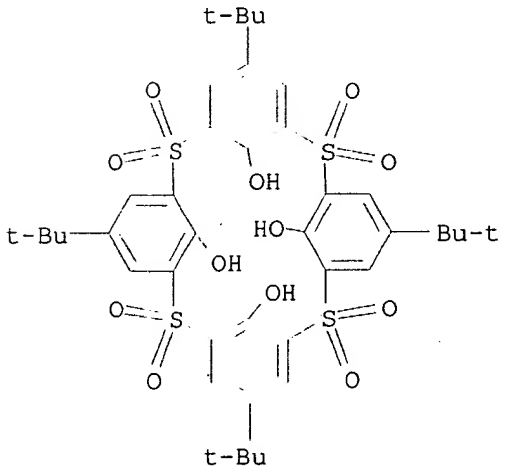


IT **204190-47-6P 204190-49-8P**
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of sulfonylcalixarene and sulfinylcalixarene derivs. as ion sensors)

RN 204190-47-6 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,8,14,20-tetraoxide (9CI) (CA INDEX NAME)



RN 204190-49-8 HCAPLUS
CN 2,8,14,20-Tetrathiapentacyclo[19.3.1.13,7.19,13.115,19]octacosa-1(25),3,5,7(28),9,11,13(27),15,17,19(26),21,23-dodecaene-25,26,27,28-tetrol, 5,11,17,23-tetrakis(1,1-dimethylethyl)-, 2,2,8,8,14,14,20,20-octaoxide (9CI) (CA INDEX NAME)



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